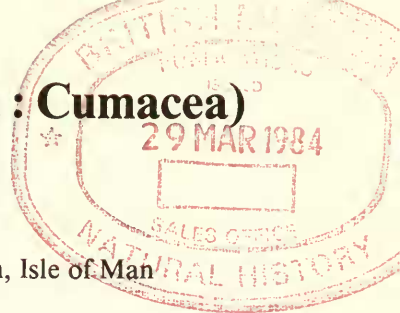


The family Nannastacidae (Crustacea : Cumacea) from the deep Atlantic

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Synopsis

One new genus and 41 new species are described in the family Nannastacidae from depths exceeding 200 m throughout the Atlantic. These are *Cumella argentiniae*, *C. divisa*, *C. spinosa*, *C. spinoculata*, *C. acuminata*, *C. aculeata*, *C. echinata*, *C. concinna*, *C. exstans*, *C. dayae*, *C. subducta*, *C. angustata*, *C. erecta*, *C. formosa*, *C. bishopi*, *C. cristata*, *C. longisipho*, *C. spicata*, *C. polita*, *C. meridionalis*, *C. compacta*, *C. decipiens*, *Atlantocuma tenuis*, *Cumellopsis bicostata*, *C. laevis*, *Platycuma candida*, *Procampylaspis inermis*, *P. procurrens*, *P. lutensis*, *P. acanthomma*, *P. serratoculus*, *P. ommidion*, *P. profunda*, *P. hirta*, *Campylaspides canariensis*, *Campylaspis scuta*, *C. valida*, *C. gamoi*, *C. propinqua*, *C. tumulifera* and *Paracampylaspis platycarpus*. One new specific synonym and three new combinations are included. Keys are provided for identification of the deep water species of *Cumella* and the known species of *Procampylaspis*. Further records of distribution are given for another 58 species already described.

Introduction

The distribution of 39 species of the genus *Campylaspis* and description of 25 new species among them were recorded in Jones (1974) and two new species of *Platycuma* and one of *Campylaspides* described in Jones (1973). Two of the supposed new species of *Campylaspis* are now considered to be synonymous with previously described species.

In the present paper records of distribution additional to those in Jones (1973, 1974) are given for all the species in the family Nannastacidae found in the collections so far examined and a further 41 new species are described. In all, 99 nannastacid species found in depths



Fig. 1 The Atlantic Ocean, showing areas from which Cumacea included in this report have been collected. Solid black circles show approximate localities of one or several stations.

exceeding 200 m throughout the Atlantic are included, while no further specimens were found of another 14 species of *Campylaspis* described in Jones (1974). Thus 59% of the total nannastacid species found among the material from the collections listed below were previously undescribed. This is probably typical, within a few per cent, of the other cumacean families.

Descriptions and records of some of the species in other families from the same collections are given in Jones (1973), Reyss (1974*a*, 1974*b*, 1975, 1978*a*, 1978*b*) and Bishop (1980, 1981*a*, 1981*b*, 1982). A preliminary account of distribution of cumacean species in the deep Atlantic was given by Jones and Sanders (1972). No general comments on distribution will be made here but it is hoped that these will be published elsewhere.

In the descriptions that follow, length of individuals is measured from the tip of the pseudorostrum (excluding siphons) to the end of the pleon (excluding uropods).

Station details

The general location of the stations at depths of 200 m or more from which material containing species of the Nannastacidae was examined is shown in Fig. 1. The sectors of the Atlantic covered by the various cruises are outlined below; full station details have been deposited in the Crustacea Section, British Museum (Natural History). The abbreviation MBAUK refers to the Marine Biological Association of the United Kingdom, Plymouth; IOS, Institute of Oceanographic Sciences, Wormley; SMBA, Scottish Marine Biological Association, Dunstaffnage; SBR, Station Biologique de Roscoff; COB, Centre Océanologique de Bretagne, Brest; WHOI, Woods Hole Oceanographic Institution.

Ship and/or Cruise (Institution)	No. of stations with Nannastacidae examined	Date	Latitude	Longitude	Depth range/m
Sarsia (MBAUK)	8	1967	43° 35.6' – 47° 40' N	3° 24.8' – 5° 0' W	119–2379
Discovery II (IOS)	7	1968	27° 13' – 28° 06' N	13° 28' – 15° 41' W	1780– 3301
Discovery II (IOS)	5	1971	59° 56.6' – 60° 08.3' N	19° 24.8' – 20° 00.1' W	2636– 2714
Challenger (SMBA)	12	1973	54° 40' – 56° 52' N	09° 10' – 12° 33' W	704– 2900
Challenger (SMBA)	10	1976, 1977, 1978	54° 34' – 56° 39' N	09° 13' – 12° 29' W	1000– 2921
Thalassa 70 (SBR)	2	1970	43° 36.2' – 43° 41.1' N	02° 17' – 03° 49.8' W	320– 1050
Thalassa 72 (SBR)	1	1972	41° 30.7' N	09° 19.9' W	1250
Thalassa 73 (SMB)	40	1973	47° 33.4' – 48° 56' N	07° 16.8' – 11° 14.3' W	330– 2070
La Perle BIOGAS I (COB)	10	1972	47° 27' – 47° 56.5' N	07° 40.1' – 08° 39.9' W	400– 2210
Jean Charcot POLYGAS (COB)	11	1972	44° 08.2' – 47° 36.1' N	04° 15' – 10° 21' W	2076 4734
Jean Charcot BIOGAS II, III, IV, VI (COB)	31	1973, 1974	44° 04' – 47° 42.4' N	04° 15.4' – 10° 27.1' W	1031– 4715
Cryos BIOGAS V (COB)	3	1974	47° 28.2' – 47° 36.1' N	08° 40.5' – 09° 35' W	2360– 4150

Ship and/or Cruise (Institution)	No. of stations with Nannastacidae examined	Date	Latitude	Longitude	Depth range/m
Jean Charcot NORBI (COB)	1	1975	69° 52.1' N	17° 08.5' E	300
Atlantis 255, 264, 273, 277, 283, 284	40	1960, 61 62, 64 65, 66 69, 73.	31° 19' – 39° 58.4' N	64° 36.3' – 71° 47' N	300– 5007
Atlantis II 12, 17, 23, 24, 30, 40		65, 66, 69, 73.			
Chain 50, 58, 88					
Knorr 35 (WHOI)					
Chain 35 (WHOI)	1	1963	07° 08' S	34° 25.5' W	770– 805
Atlantis II 31 (WHOI)	8	1967	10° 30' N– 08° 02' S	17° 49' – 34° 25' W	587– 3783
Atlantis II 42 (WHOI)	12	1968	08° 46' – 22° 54' S	09° 04' – 13° 32' E	205– 4566
Atlantis II 59 (WHOI)	2	1970	33° 40' – 33° 57' N	15° 08.2' – 16° 16' E	500– 1509
Atlantis II 60 (WHOI)	14	1971	36° 05.2' – 38° 16.9' S	48° 58.1' – 53° 23.9' W	256– 5223
Knorr 25 (WHOI)	10	1972	07° 45.3' – 13° 16' N	52° 24' – 56° 20' W	508– 4980
Chain 106 (WHOI)	6	1972	50° 04.7' – 51° 32.2' N	12° 35.9' – 15° 44.8' W	1491– 4435
Chain 106 (WHOI)	1	1972	40° 42.6' – 40° 44' N	46° 13.8' – 46° 14.6' W	4400

Systematic descriptions and details of distribution

Genus *CUMELLA* Sars, 1865

No eyes or a single median ocular group. Maxilliped 2 usually with 6 segments. Peduncle of the uropods usually longer than the rami and the inner ramus usually longer than the outer.

Bacescu (1972) erected a new genus, *Schizocuma*, with the following diagnosis: pseudo-rostral lobes widely separated, forming two divergent funnels slightly upraised. Frontal lobes huge, terminating in the optic lobe without any trace of lenses. Abdominal segments and uropods particularly long and thin. Basis of maxilliped 3 without lower anterior projection and basis of pereopod hardly broadened proximally. He included in the genus a new species *S. vema* and *Schizotrema calmani* Stebbing, 1912, together with *Cumella mollosa* Zimmer, 1907.

Bacescu and Muradian (1974a) erected a further new genus, *Styloptocuma*, to include a new species, *S. antipai*, with *Cumella gracillima* Calman, 1905, and *C. egregia* Hansen, 1920. The generic diagnosis was: very elongated cumaceans, richly provided with spines at least on the carapace. Long pseudorostrum suddenly curved, considerably overrun in length by an aberrant ocular styliiform lobe, without any trace of visual elements. Antenna I with a very long basal segment, exceeding the whole length of the appendage. Pereopods and uropods extremely long.

No clear pattern emerges among the new species described here by which they can be separated into genera. Three of the new species have a partially divided eyelobe as in

Schizocuma vema and although they have separated siphons, these are set close together and not widely separated. The pleon and uropods are not particularly long and thin in these species and they do not differ in these respects from other species with undivided eyelobes. *Cumella carinata* (Hansen, 1887) has a partially divided eyelobe but could not possibly be placed in *Schizocuma*. Stebbing's *Schizotrema calmani* apparently does not have a divided eyelobe although he states that the pseudorostral lobes are widely apart in dorsal aspect. Although this species obviously does not belong to *Schizotrema*, it also has little in common with *Schizocuma vema*. *Cumella molossa* shows equally little resemblance to *Schizocuma vema* but does resemble *Cumella spinoculata* sp. n. described below.

Styloptocuma antipai quite closely resembles *Cumella egregia* but less closely *Cumella gracillima*. However, some of the other species described below are close to one or other of these three species but are not sharply separated from others. I do not propose to accept *Schizocuma* or *Styloptocuma* as valid genera. The shape of the eyelobe varies greatly in *Cumella* but no obvious grouping can be seen in this character. There may, however, be a case for dividing the genus into the shallow water species with well developed but not elongated eyelobe with lenses distinct, fairly short and compact carapace and pereon, and relatively short uropods, from the remainder found in deeper water, with the eyelobe rudimentary or elongated but without lenses, carapace and pereon often more elongated, and uropods relatively long. Even among the species so far known, and there must be many as yet undescribed, the division breaks down in several instances. I propose, therefore, to refer all the species to *Cumella* for the present.

The following descriptions are mainly confined to those characters which can be examined under a stereoscopic microscope. In the genus *Cumella* the mouthparts do not show much variation, and the important characters for identification are the proportions and armature of the carapace, the relative length of the pseudorostrum and the angle which it makes with the dorsal line of the carapace, the length, shape and armature of the eyelobe and presence or absence of visual elements, the proportions and shape of the first antenna and to a lesser extent the anterior pereopods, the armature of the pereon, the relative length and slenderness of the pleon and the presence, number or absence of spine rows or serrations on it, and the relative length, proportions and armature of the uropods.

Cumella argentinae sp. nov.

(Fig. 2)

MATERIAL. AII60-280: 1 imm. ♂, 10 ad. ♀♀, 7 juv.

DESCRIPTION. Ovigerous female, length 2.7 mm: carapace (Fig. 2a-c) more than $1\frac{1}{2}$ as long as deep, rather compressed laterally, with usually some short setae and a distinct dorsal ridge bearing a series of more than 30 small teeth diminishing in size from front to rear, but these are not developed in some individuals; the pseudorostrum is fairly short and the siphons not very long; the antero-lateral angle is fairly prominent with a row of serrations extending backwards from it; the eyelobe is broad and well developed, with lenses visible. Pereon and pleon without spines, the pleon a little shorter than the carapace and pereon combined.

Antenna 1 (Fig. 2d) short with basal segment about as long as second and third together, the second with a blunt distal projection. Pereopod 1 (Fig. 2g) with basis a little shorter than remaining segments together; there are some blunt serrations along its lower distal edge; the carpus is about twice as long as the propodus and three times as long as the dactyl. Pereopod 2 (Fig. 2h) with basis broad, some serrations on its upper distal edge, nearly as long as remaining segments together; its dactyl is fairly broad, about as long as the carpus and propodus together. Uropod (Fig. 2i) with peduncle not very long, about as long as pleonite 5 and $1\frac{1}{2}$ as long as the endopod, which is distinctly longer than exopod; the peduncle is serrated on the inner edge and the endopod has a few longer spines interspersed with more short spines.

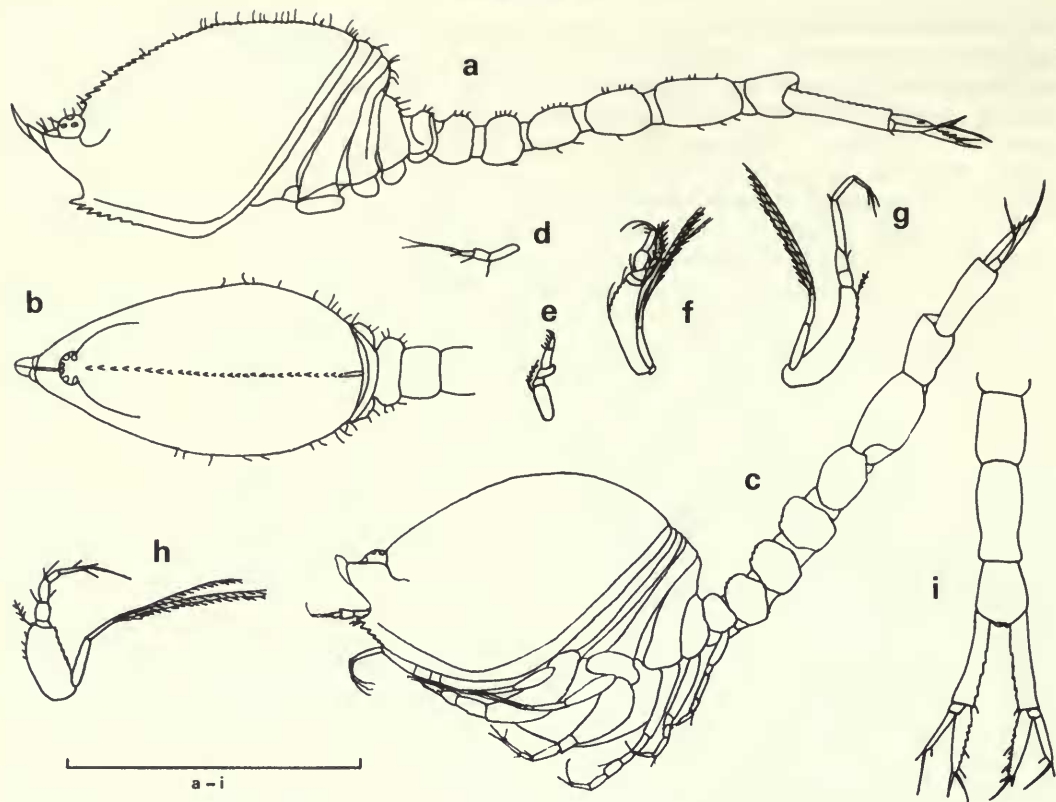


Fig. 2 *Cumella argentineae* ♀, (a) lateral view; (b) carapace and pereon from above; (c) ovigerous ♀ from side; (d) antenna 1; (e) maxilliped 2; (f) maxilliped 3; (g) pereopod 1; (h) pereopod 2; (i) uropods and end of pleon. Scale bars in this and the following figures represent 1 mm.

TYPE LOCALITY. 36° 18' S, 53° 23.9' W, 256–293 m. Types deposited in the British Museum (Natural History). Holotype 1982 : 292 : 1, paratypes 1982 : 293 : 5.

REMARKS. *C. argentineae* quite closely resembles *C. pygmaea* Sars but the female carapace is either smooth or has about 30 small teeth dorsally rather than having not more than 12 longer mid-dorsal spines.

DISTRIBUTION. Although it was collected from somewhat below 200 m depth, it is probably a shelf species as suggested by the well developed eye.

Found so far only off the Argentine coast in 256–293 m.

***Cumella tarda* Hansen 1920**
(Fig. 3)

MATERIAL. SMBA-ES 129: 1 ad. ♂. *Thalassa* 73-Z426: 1 ad. ♂.

DISTRIBUTION. Although the two hauls from which single specimens were obtained took place in depths of 860 and 2900 m respectively from Biscay and west of Scotland, Hansen's original records were from a pelagic haul south-west of the Faroes. The facts that only adult males have been collected and these have well developed eyes with large lenses make it likely that these two specimens entered the nets near the surface on the way up or down, although the whereabouts of the females remain unknown.

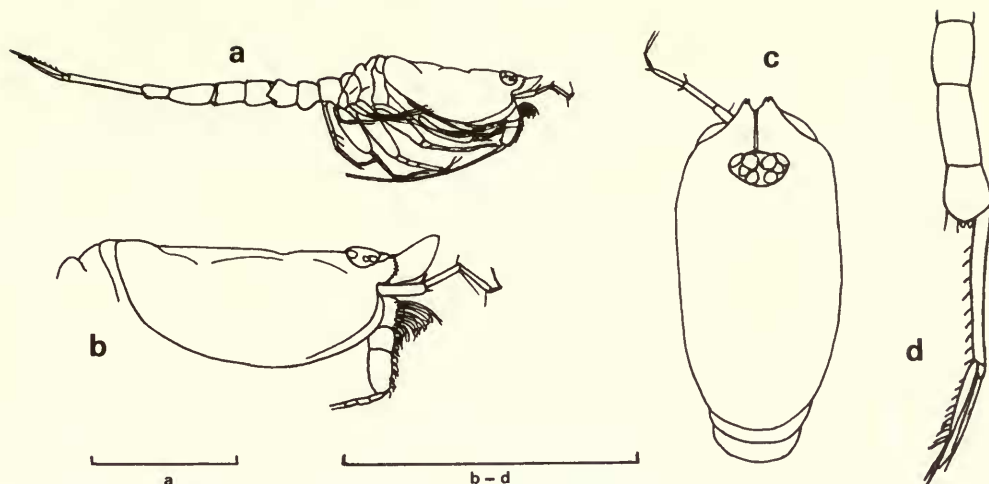


Fig. 3 *Cumella tarda* ♂, (a) lateral view (flagellum of antenna 2 incomplete); (b) carapace from side; (c) carapace from above; (d) uropod and end of pleon.

Cumella gracillima Calman, 1905

(Fig. 4)

MATERIAL. MBAUK-50: 1 imm. ♀. SMBA-ES4: 2 imm. ♀♀. ES12: 2 ad. ♀♀, 2 imm. ♀♀. ES22: 5 ad. ♂♂, 8 ad. ♀♀, 1 juv. ES147: 1 ad. ♂, 1 imm. ♂, 3 ad. ♀♀. *Thalassa* 70-W357: 4 ad. ♀♀. *Thalassa* 73-Z434: 1 ad. ♀. Z457: 2 imm. ♀♀. BIOGAS I-DS08: 1 imm. ♀. DS11: 1 juv. DS13: 1 ad. ♂, 1 imm. ♂, 2 ad. ♀♀. POLYGAS-DS15: 5 ad. ♂♂, 10 imm. ♂♂, 30 ad. ♀♀, 6 imm. ♀♀. DS18: 1 ad. ♂, 6 imm. ♂♂, 10 ad. ♀♀, 10 imm. ♀♀. BIOGAS III-DS35: 1 imm. ♂, 3 ad. ♀♀. DS41: 2 imm. ♀♀. BIOGAS IV-DS64: 2 imm. ♀♀. BIOGAS V-DS66: 3 imm. ♀♀. BIOGAS VI-CP09: 2 imm. ♂♂, 5 imm. ♀♀. CP25: 1 ad. ♀, 1 imm. ♀. AII12-64: 1 ad. ♂, 22 ad. ♀♀, 3 imm. ♀♀. 66: 8 ad. ♀♀, 4 juv. 72: 1 imm. ♂. Ch50-85: 4 imm. ♂♂, 8 ad. ♀♀. 87: 1 ad. ♀. AII17-95: 2 juv. AII31-155: 1 ad. ♂, 2 imm. ♂♂, 2 ad. ♀♀, 2 imm. ♀♀. 156: 5 imm. ♂♂. 159: 1 ad. ♂, 1 imm. ♂, 2 ad. ♀♀. AII42-200: 1 imm. ♂, 2 juv. AII60-239: 3 imm. ♀♀. Kn25-287: 1 imm. ♂, 2 ad. ♀♀, 3 imm. ♀♀, 3 juv. 288: 2 imm. ♂♂, 2 ad. ♀♀, 2 imm. ♀♀. 291: 3 ad. ♀♀. 293: 2 ad. ♀♀, 1 imm. ♀. 299: 3 ad. ♀♀, 3 imm. ♀♀. 301: 25 imm. ♂♂, 27 ad. ♀♀, 22 imm. ♀♀. 303: 14 imm. ♂♂, 25 ad. ♀♀, 7 juv. 306: 1 ad. ♀. Ch106-313: 2 ad. ♀♀, 2 juv. 321: 1 imm. ♀. 334: 3 imm. ♂♂, 5 imm. ♀♀, 1 juv. Kn35-340: 4 ad. ♂♂, 16 imm. ♂♂, 18 ad. ♀♀, 15 imm. ♀♀, 7 juv.

DISTRIBUTION. Previously recorded only from west of Ireland, 364–699 m., this species is widespread throughout the deep Atlantic down to 5000 m and especially on the lower slope and in abyssal depths.

Cumella egregia Hansen, 1920

(Fig. 5)

MATERIAL. MBAUK-65: 1 ad. ♀. IOS-6711: 1 ad. ♀. SMBA-ES4: 1 imm. ♂, 1 imm. ♀. BIOGAS I-DS05: 1 ad. ♂. DS13: 5 imm. ♂♂, 2 ad. ♀♀, 1 juv. POLYGAS-DS15: 5 imm. ♂♂, 21 ad. ♀♀, 5 imm. ♀♀. DS16: 3 ad. ♀♀. DS17: 4 ad. ♀♀. DS18: 1 ad. ♂, 1 imm. ♂, 9 ad. ♀♀, 20 imm. ♀♀. BIOGAS II-DS31: 1 ad. ♂, 1 imm. ♂, 3 imm. ♀♀. BIOGAS III-DS36: 1 imm. ♀. DS41: 1 ad. ♂, 8 imm. ♂♂, 7 ad. ♀♀, 2 imm. ♀♀. BIOGAS IV-DS64: 2 ad. ♂♂. BIOGAS V-DS65: 1 ad. ♀. BIOGAS VI-CP23: 4 ad. ♀♀. CP24: 2 imm. ♂♂, 1 ad. ♀. Ch50-85: 3 ad. ♂♂, 9 imm. ♂♂, 9 ad. ♀♀. AII24-126: 2 ad. ♀♀. AII31-156: 1 imm. ♂, 1 imm. ♀. 159: 1 imm. ♂. 167: 1 imm. ♂, 4 ad. ♀♀, 1 imm. ♀. 169: 3 imm. ♂♂, 1 ad. ♀. Kn25-287: 1 imm. ♂, 3 ad. ♀♀, 1 imm. ♀. 295: 2 imm. ♂♂, 10 ad. ♀♀, 3 juv. 299: 1 ad. ♂, 3 imm. ♂♂, 8 ad. ♀♀. 301: 2 imm. ♂♂. Ch106-334: 1 imm. ♂, 1 imm. ♀.

DISTRIBUTION. Previous records were only those of Hansen from the Davis Strait in 2624 m. The present records show it to be widespread between 587 and 4400 m, with much the same distribution in the North Atlantic as *C. gracillima*. There are no records yet from the South Atlantic south of the tropics.

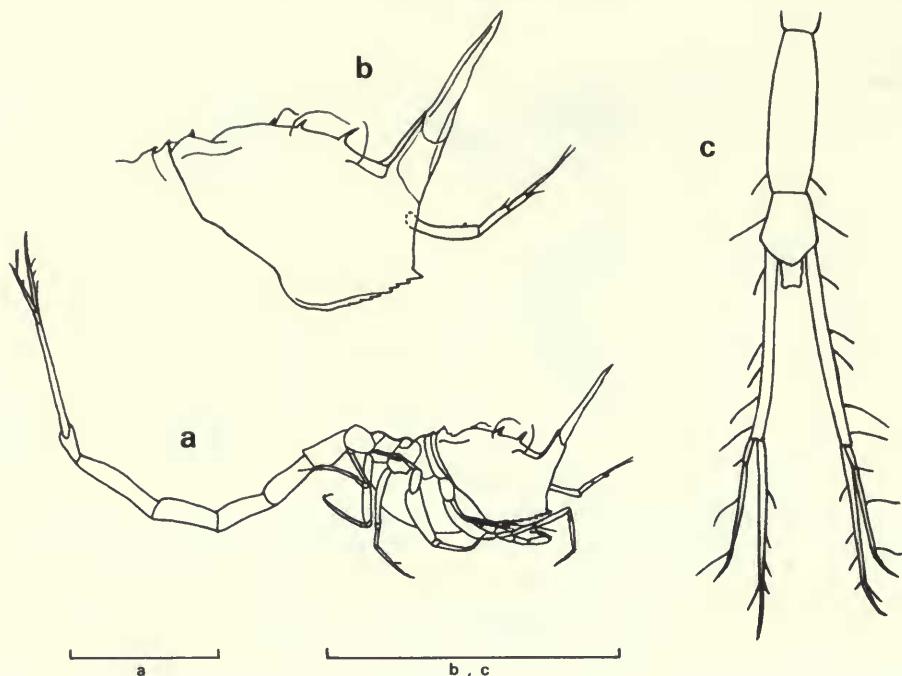


Fig. 4 *Cumella gracillima* ovigerous ♀, (a) lateral view; (b) carapace from side; (c) uropods and end of pleon.

Cumella antipai (Bacescu & Muradian, 1974) comb. nov.
(Fig. 6)

Styloptocuma antipai Bacescu & Muradian, 1974.

MATERIAL. Kn25-293: 12 ad. ♀♀, 5 imm. ♀♀.

DISTRIBUTION. The original records were from Cape Hatteras to Florida, 1000 to 1091 m. It is now recorded from 1500 m off Surinam.

Cumella vema (Bacescu, 1972) comb. nov.
(Fig. 7)

Schizocuma vema Bacescu, 1972.

MATERIAL. BIOGAS I-DS05: 2 ad. ♀♀, 2 imm. ♀♀, 3 juv. DS06: 1 ad. ♂, 1 ad. ♀. DS07: 3 imm. ♂♂. DS11: 3 imm. ♀♀. DS13: 1 imm. ♂, 4 ad. ♀♀, 1 juv. POLYGAS-DS15: 7 imm. ♂♂, 13 ad. ♀♀. DS16: 1 imm. ♂, 1 imm. ♀. DS18: 3 ad. ♂♂, 4 imm. ♂♂, 24 ad. ♀♀, 20 imm. ♀♀. DS26: 1 imm. ♀. BIOGAS II-DS32: 1 imm. ♂. BIOGAS III-DS35: 2 ad. ♀♀, 2 imm. ♀♀. DS36: 1 imm. ♀. DS37: 1 imm. ♀, 1 juv. DS38: 1 imm. ♀, 2 juv. DS49: 1 imm. ♀. BIOGAS IV-DS62: 2 imm. ♀♀, 1 juv. DS63: 1 imm. ♂, 2 imm. ♀♀. DS64: 1 ad. ♂, 1 imm. ♂, 4 ad. ♀♀, 6 imm. ♀♀. BIOGAS VI-DS86: 1 imm. ♂, 7 ad. ♀♀, 4 imm. ♀♀, 1 juv. DS87: 1 ad. ♂, 1 imm. ♂, 4 ad. ♀♀, 10 imm. ♀♀. CP09: 1 imm. ♀. CP23: 1 imm. ♂, 3 ad. ♀♀, 1 imm. ♀. CP24: 1 imm. ♂. CP25: 2 imm. ♂♂, 3 ad. ♀♀, 2 imm. ♀♀. All31-167: 3 imm. ♂♂, 1 ad. ♀. Kn25-297: 1 imm. ♂.

DISTRIBUTION. Known previously from a single male, east of Florida, 1316 m, it is now recorded from the Bay of Biscay and off the coasts of tropical Brazil and Surinam, from the slope between 500 and 2350 m. The adult female (Fig. 7a, b) has a series of about four prominent spines mid-dorsally on the carapace.

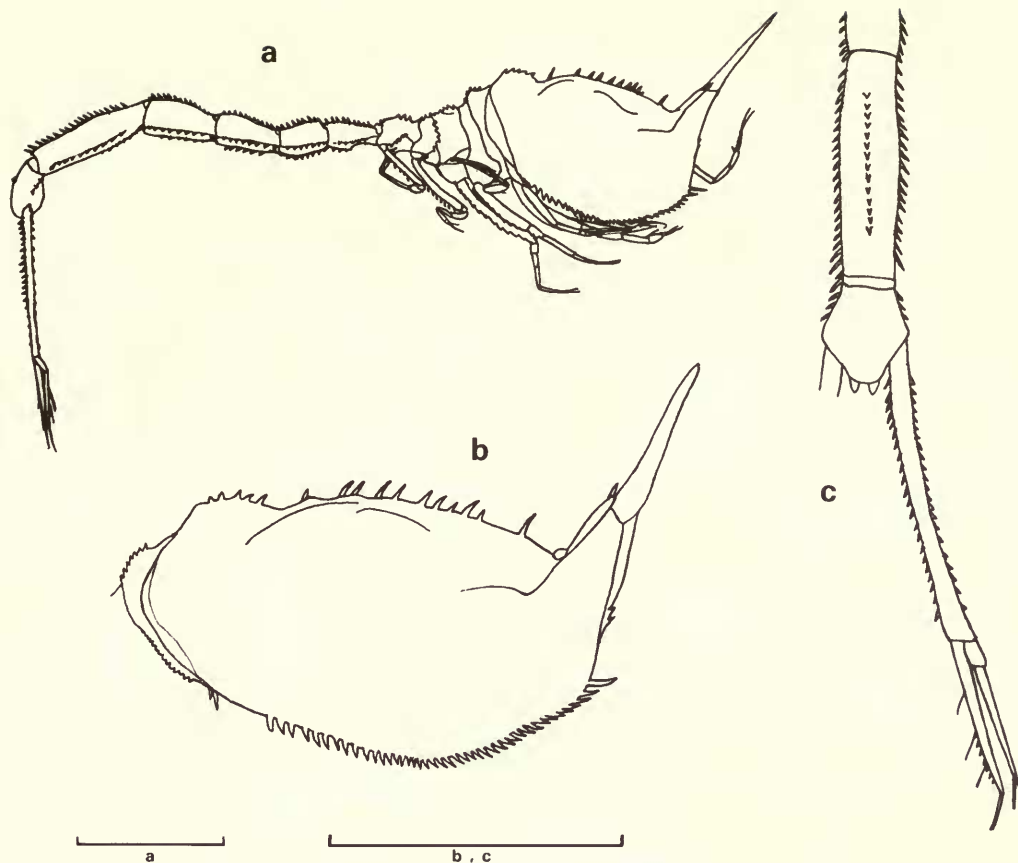


Fig. 5 *Cumella egregia* ♀, (a) lateral view; (b) carapace from side; (c) uropod and end of pleon.

Cumella divisa sp. nov.

(Fig. 8)

MATERIAL. MBAUK-65: 1 imm. ♂, 1 juv. SMBA-ES10: 3 imm. ♂♂, 1 ad. ♀. ES18: 1 ad. ♀, 1 imm. ♀. ES20: 1 ad. ♀, 1 imm. ♀, 1 juv. *Thalassa* 73-Z413: 2 imm. ♀♀. Z421: 1 ad. ♀. Z429: 1 imm. ♂, 1 ad. ♀, 4 imm. ♀♀. Z435: 1 imm. ♂, 1 imm. ♀. Z437: 1 ad. ♀, 2 imm. ♀♀. Z438: 3 imm. ♂♂, 3 imm. ♀♀. Z445: 1 imm. ♂. Z447: 1 imm. ♂, 4 ad. ♀♀, 2 imm. ♀♀. Z449: 1 imm. ♀. Z453: 1 imm. ♀, 1 juv. BIOGAS I-DS05: 1 ad. ♀. DS09: 1 imm. ♂. DS13: 1 ad. ♀. BIOGAS IV-DS51: 1 imm. ♂, 1 ad. ♀. AII31-142: 2 imm. ♂♂, 3 ad. ♀♀. AII42-192: 1 ad. ♀. 194: 1 imm. ♀. Ch106-318: 2 imm. ♀♀.

DESCRIPTION. Adult female, length 3.0 mm: carapace (Fig. 8a, b) rather long, twice as long as high, with a short pseudorostrum little upturned. Siphon fairly long. Dorsal outline somewhat uneven, without spines except on the eyelobe but with some scattered hairs. The eyelobe is not elongated but broad and distinctly doubled and seems to show the rudiments of lenses. Antero-lateral angle marked by a prominent tooth with the border serrated behind. Pereon somites unarmed except for a few hairs. Pleon fairly short, without spines or setae. Pleonite 6 little produced backwards and truncate posteriorly.

Antenna 1 fairly long but basal segment shorter than second and third together, the second without a distal projection. Pereopod 1 (Fig. 8c) with basis about half length of rest of appendage; propodus about $1\frac{1}{2}$ as long as carpus and more than twice as long as dactyl. Pereopod 2 (Fig. 8d) with basis about $\frac{4}{5}$ length of rest of appendage; dactyl distinctly longer than carpus and more than twice as long as propodus. Pereopod 5 of normal length. Uropod

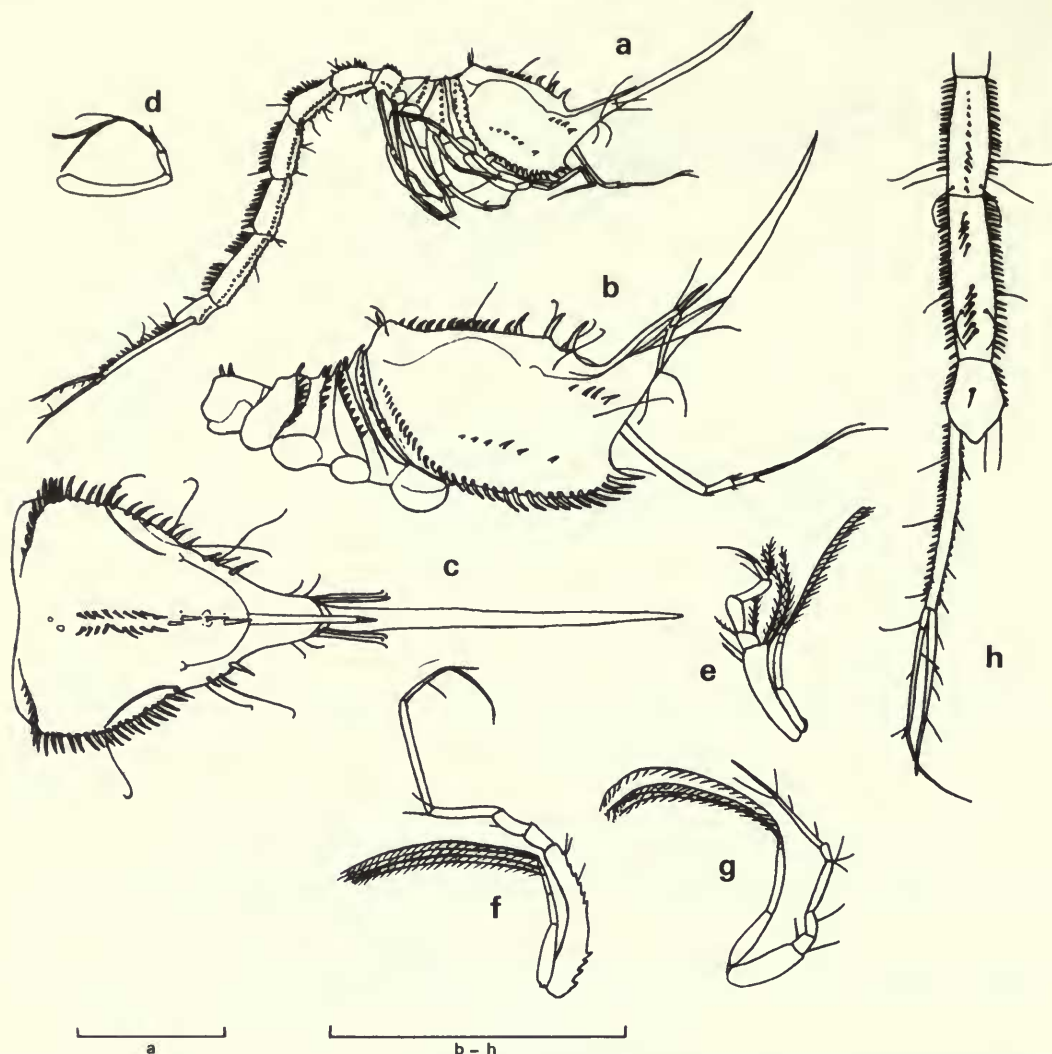


Fig. 6 *Cumella antipai* ovigerous ♀, (a) lateral view; (b) carapace and pereon from side; (c) carapace from above; (d) antenna 1; (e) maxilliped 3; (f) pereopod 1; (g) pereopod 2; (h) uropod and end of pleon.

(Fig. 8e) fairly long, with peduncle unarmed except for about 7 setae, shorter than last two pleonites together and about $1\frac{1}{2}$ as long as the endopod, which is little longer than the exopod.

TYPE LOCALITY. $48^{\circ}47.3'N$ – $48^{\circ}47.4'N$, $11^{\circ}12'W$ – $11^{\circ}14.3'W$, 1430–1550 m. Type specimens deposited in the Museum National d'Histoire Naturelle, Paris. Holotype ♀ no. Cu 198, paratypes Cu 199.

REMARKS. This and the following two species have the eyelobe divided into two parts but differ from *Cumella vema* in having the pseudorostral lobes and siphons either together or only narrowly separated and by having a prominent spine on each half of the eyelobe. From *C. spinosa* sp. nov. it is easily distinguished, at least in the female, by the absence of dorsal spines on the carapace and from *C. spinoculata* sp. nov. by the absence of spines below the pseudorostrum, the less prominent antero-lateral angle of the carapace and the lack of spine rows transversely on the pereon somites.

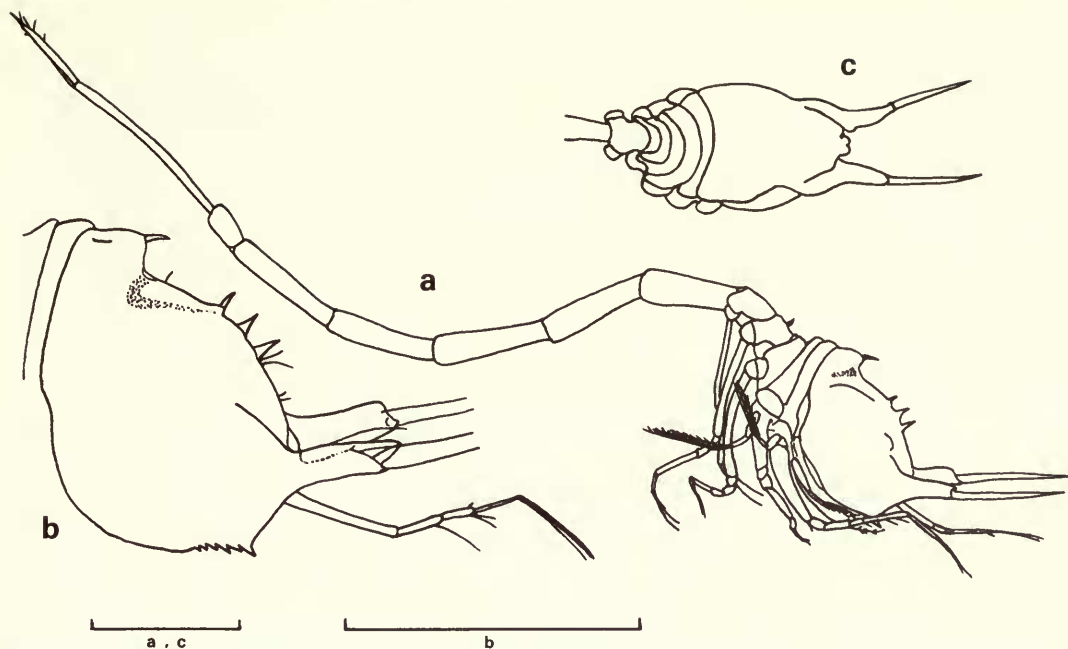


Fig. 7 *Cumella vema* ♀, (a) lateral view; (b) carapace from side; (c) carapace and pereon from above.

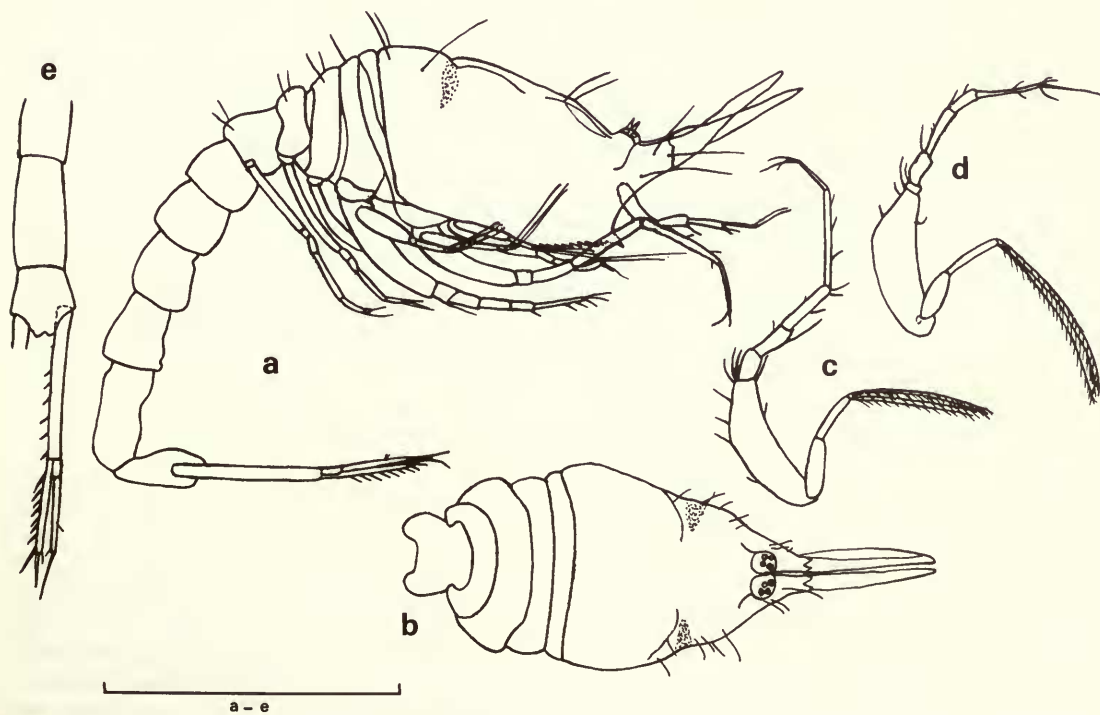


Fig. 8 *Cumella divisa* ♀, (a) lateral view; (b) carapace and pereon from above; (c) pereopod 1; (d) pereopod 2; (e) uropod and end of pleon.

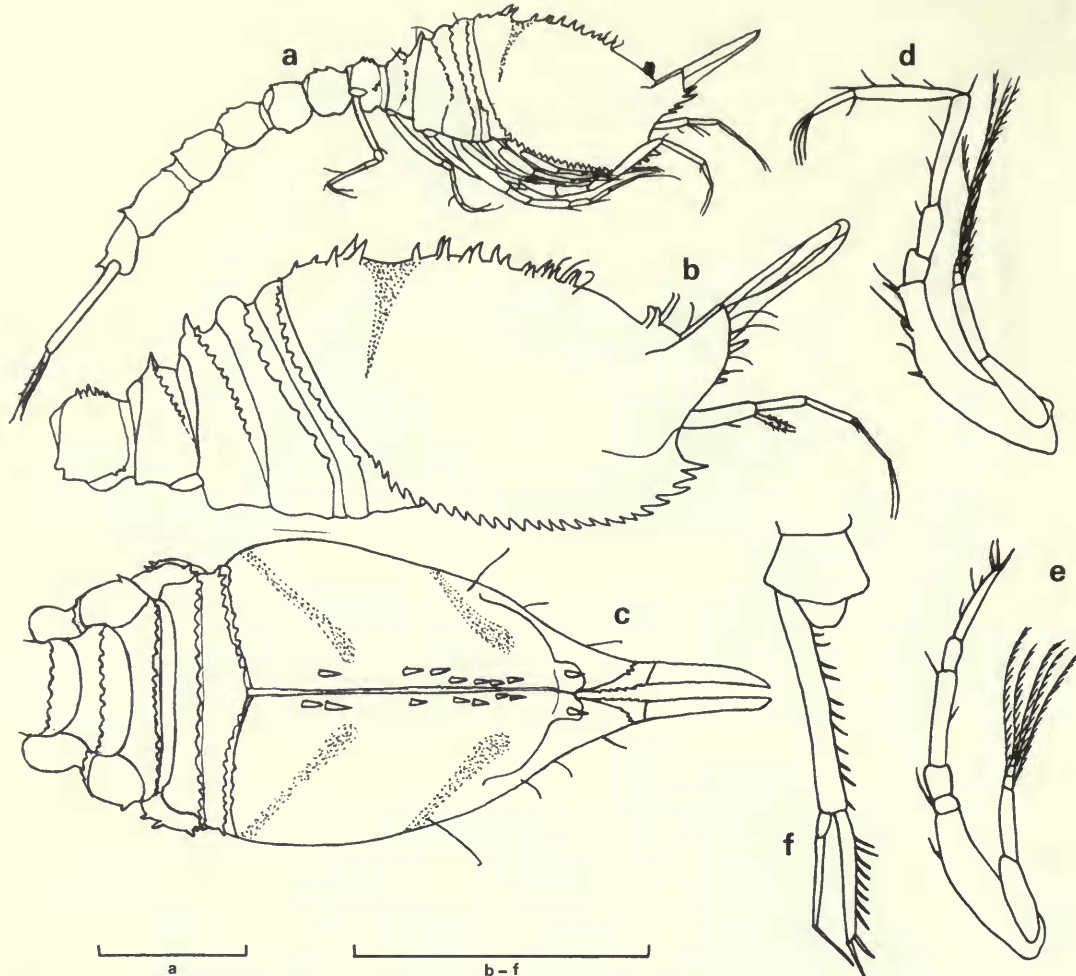


Fig. 9 *Cumella spinosa* ♀, (a) lateral view; (b) carapace and pereon from side; (c) carapace and pereon from above; (d) pereopod 1; (e) pereopod 2; (f) uropod and end of pleon.

DISTRIBUTION. Recorded from the NE. Atlantic, Biscay, off Dakar and SW. Africa from the upper slope downwards, 610 to 2864 m. depth.

Cumella spinosa sp. nov.
(Fig. 9)

MATERIAL. All 60-262: 2 ad. ♀♀, 3 imm. ♀♀.

DESCRIPTION. Adult female, length 4.4 mm: carapace (Fig. 9a-c) about $1\frac{3}{4}$ as long as high with pseudorostrum fairly short and upturned at about 30° . Siphons fairly long and a little separated. Dorsal outline a little convex, with an irregularly doubled row of fairly prominent teeth, about 8 on either side of the mid-dorsal line. The eyelobe is short and distinctly doubled, with a spine on each part. There are some forwardly directed spines about the antennal notch, which is well excavated. The antero-lateral angle is prominent and the lower edges of the carapace strongly serrated. Each pereonite carries a transverse row of spines, blunt on the side but more prominent mid-dorsally. There are a few spines on the pleon somites, of which the 6th is prominently produced between the bases of the uropods and rounded posteriorly.

Antenna 1 fairly long, with segments slender, the basal a little shorter than the second and third together, the second without a distal projection. Pereopod 1 (Fig. 9d) with the basis having a few prominent spines on its lower edge, about 2/3 as long as remaining segments together; carpus and propodus nearly equal in length and about twice as long as dactyl. Pereopod 2 (Fig. 9e) with basis about 2/3 as long as remainder of appendage; dactyl a little shorter than the carpus and twice as long as propodus. Pereopod 5 well developed. Uropod (Fig. 9f, g) of moderate length, with peduncle about as long as the last two pleon somites together, and with about 11 slender spines on its inner edge; it is about $1\frac{1}{2}$ as long as the endopod, which also carries a number of slender spines and is distinctly longer than the exopod.

TYPE LOCALITY. 36° 02.5' S, 52° 17.9' W, 2440–2480 m. Type specimens deposited in the British Museum (Natural History). Holotype 1982 : 294 : 1, paratypes 1982 : 295 : 4.

REMARKS. *C. spinosa* may be distinguished from *C. spinoculata* sp. nov. by the double spine row dorsally on the carapace. The pair of spines on the eyelobe is also curved backwards whereas it is forward pointing in the latter species.

DISTRIBUTION. 5 ♀♀ recorded at present from a single station in the Argentine basin.

Cumella spinoculata sp. nov.

(Fig. 10)

MATERIAL. SMBA-ES59: 3 imm. ♀♀. ES129: 1 imm. ♂, 1 ad. ♀. ES135: 1 imm. ♂. ES143: 1 juv. ES147: 1 imm. ♂, 2 ad. ♀♀. BIOGAS I-DS11: 2 imm. ♂♂. DS12: 2 ad. ♀♀. POLYGAS-DS15: 5 imm. ♂♂, 10 ad. ♀♀, 5 imm. ♀♀, 2 juv. DS17: 1 imm. ♀. DS18: 2 imm. ♂♂, 2 ad. ♀♀, 8 imm. ♀♀. BIOGAS III-DS35: 3 ad. ♀♀. DS36: 2 imm. ♂♂, 1 juv. BIOGAS IV-DS52: 1 imm. ♀, 1 juv. DS62: 1 imm. ♀. DS63: 1 imm. ♂. DS64: 1 min. ♂, 2 imm. ♀♀. BIOGAS VI-DS86: 1 imm. ♂. DS87: 1 imm. ♂, 2 imm. ♀♀. CP24: 1 imm. ♂, 1 ad. ♀. Ch106-313: 2 imm. ♂♂, 3 ad. ♀♀.

DESCRIPTION. Adult female, length 4.4 mm: carapace (Fig. 10a–c) nearly twice as long as high with pseudorostrum moderately long and upturned at about 25°; from the side it is acutely pointed at the upper edge. The siphons are separated and fairly long. The dorsal outline is convex but without spines except for a pair of prominent spines on the doubled eyelobe. There are some forwardly directed spines at the lower edge of the pseudorostrum. The antennal notch is well excavated and the antero-lateral angles marked by a long strong spine, behind which a series of strong serrations extends back on either side to the lower hind edge. There is a well marked depression on the dorsal part of the carapace about $\frac{3}{4}$ of its length towards the hind edge. A transverse row of blunt teeth is present on each of the pereon somites and some long scattered hairs occur on these and on the carapace. There are some fairly prominent teeth on the pereon epimera. The pleon is moderately long and each somite has a few blunt teeth laterally or ventrally, with a fairly prominent one mid-dorsally at the hind end of the 5th pleonite. The 6th somite is well produced between the bases of the uropods and rounded behind but ending in a single tooth.

Antenna 1 (Fig. 10d) is fairly long. The segments decrease successively in length and the basal segment has a distal spine. The pereopods (Fig. 10f, g) are generally similar to those of *C. spinosa* but a little more slender. The uropod peduncles (Fig. 10h) are considerably shorter than the last two pleonites together but these appendages differ little in other respects from those of *C. spinosa*.

TYPE LOCALITY. 47° 35.2' N, 8° 40.1' W, 2246 m. Type specimens deposited in the Museum National d'Histoire Naturelle, Paris. Holotype ♀ no. Cu 200, paratypes Cu 201.

REMARKS. This species is evidently closely related to *C. spinosa* and the most obvious distinguishing characters are noted under that species. It also seems close to *C. molossa* Zimmer from the Antarctic and may be identical with it. However, further specimens of *C. molossa* would be necessary to decide this and the differences in geographical range make it unlikely.

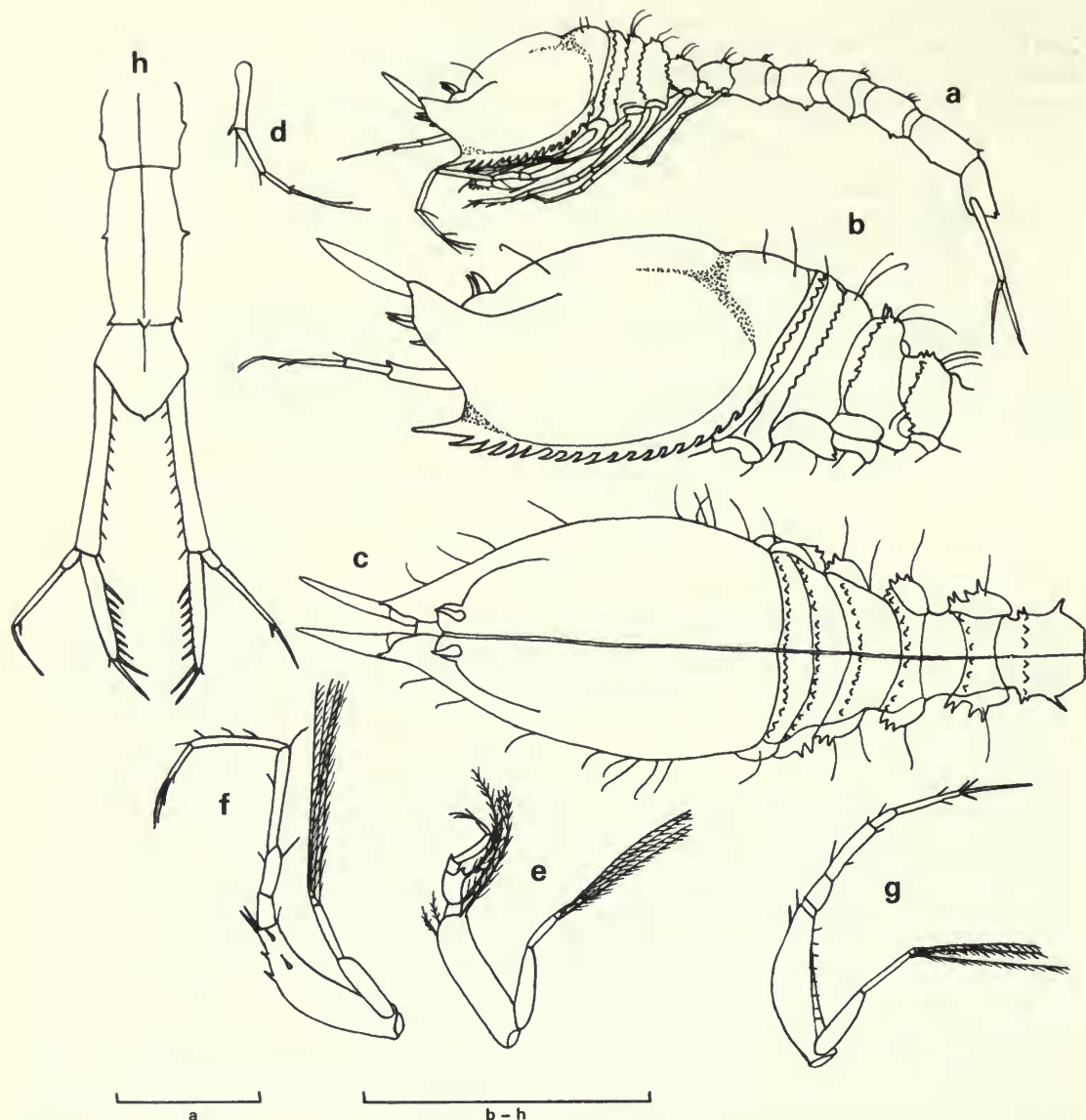


Fig. 10 *Cumella spinoculata* ♀, (a) lateral view; (b) carapace and pereon from side; (c) carapace and pereon from above; (d) antenna 1; (e) maxilliped 3; (f) pereopod 1; (g) pereopod 2; (h) uropods and end of pleon.

DISTRIBUTION. Collected at numerous stations in the Biscay area and from the west of Scotland between 1500 and 2900 m, from the lower slope downwards.

***Cumella acuminata* sp. nov.**

(Fig. 11)

MATERIAL. POLYGAS-DS21: 6 ad. ♀♀, 2 juv. BIOGAS V-DS66: 3 ad. ♀♀. BIOGAS VI-DS86: 1 ad. ♀. AII31-142: 1 ad. ♂, 2 ad. ♀♀. 155: 3 imm. ♂♂, 6 ad. ♀♀, 3 imm. ♀♀. 156: 2 ad. ♂♂, 2 imm. ♂♂, 87 ad. ♀♀, 28 imm. ♀♀, 11 juv. 162: 1 imm. ♂, 1 ad. ♀, 1 imm. ♀. 167: 1 ad. ♂, 6 imm. ♂♂, 19 ad. ♀♀, 6 imm. ♀♀. Kn25-287: 1 imm. ♂, 6 ad. ♀♀, 3 imm. ♀♀. 291: 1 ad. ♀, 2 imm. ♀♀. 306: 2 imm. ♂♂, 7 ad. ♀♀, 9 imm. ♀♀, 1 juv. Ch106-321: 1 imm. ♀. 326: 1 imm. ♂ 1 imm. ♀. 328: 3 ad. ♀♀.

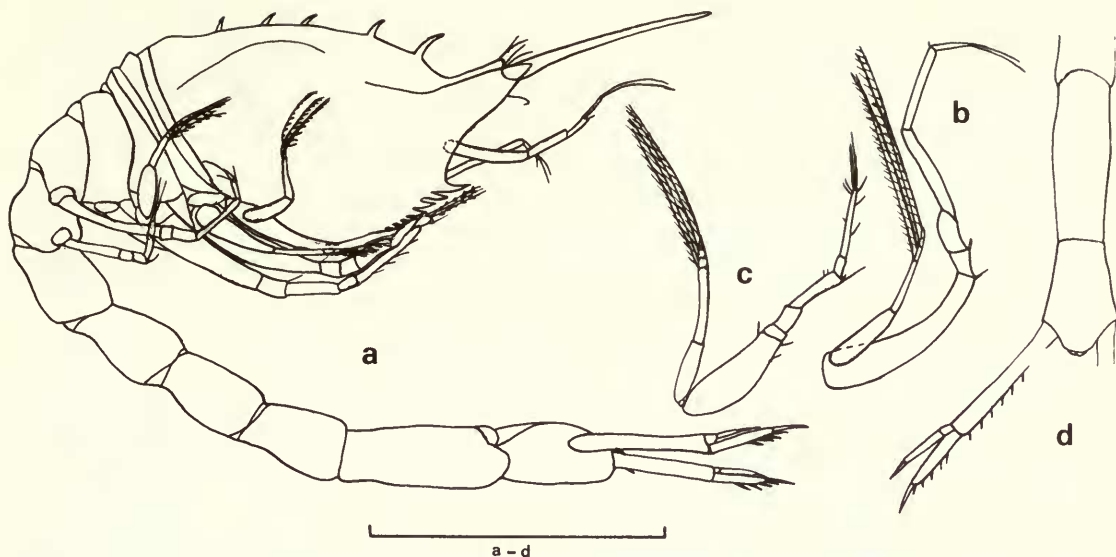


Fig. 11 *Cumella acuminata* ♀, (a) lateral view; (b) pereopod 1; (c) pereopod 2; (d) uropod and end of pleon.

DESCRIPTION. Adult female, length 4.2 m: carapace (Fig. 11a) about $1\frac{1}{4}$ as long as deep, with about 5 or fewer narrow forward-pointing mid-dorsal spines, scattered hairs in some individuals, sometimes hexagonal reticulation visible on its sides. The pseudorostrum is fairly long and only a little turned up from the line of the dorsum; siphons very long. The eyelobe is long and narrow, ending in a spine projecting beyond the pseudorostrum. The antennal notch is little excavated and there is a fairly large spine at the antero-lateral angle followed by a short row decreasing in size. Pereon unarmed or with a few short dorsal spines. Pleon unarmed or with a row of mid-dorsal spines and moderately long; pleonite 6 with a rounded backward projection.

Antenna 1 fairly long, with basal segment about twice as long as second, which is longer than the third. Pereopod 1 (Fig. 11b) with basis narrow and unarmed, about $\frac{2}{3}$ as long as rest of appendage; the carpus is a little longer than the propodus which is more than twice as long as the dactyl. Pereopod 2 (Fig. 11c) with basis a little more than $\frac{2}{3}$ as long as more distal segments together; the dactyl is longer than the carpus and more than three times as long as the propodus. Uropods (Fig. 11d) with peduncle fairly short but not broadened, usually distinctly shorter than pleonite 5 and twice as long as the endopod, which is distinctly longer than the exopod; peduncle and endopod have some short spines on their inner edges.

TYPE LOCALITY. $00^{\circ} 46' \text{ S}$ – $00^{\circ} 46.5' \text{ S}$, $29^{\circ} 24' \text{ W}$, 3459 m. Type specimens deposited in the British Museum (Natural History). Holotype 1982 : 296 : 1, paratypes 1982 : 297 : 12.

REMARKS. *C. acuminata* resembles in its general aspect *C. meridionalis* sp. nov. (Fig. 26) but may easily be distinguished by its much longer eyelobe.

DISTRIBUTION. Found from mid-slope out to abyssal depths, 943–5000 m, from the Biscay area and off Dakar, and from Surinam and off Recife.

Cumella aculeata sp. nov.
(Fig. 12)

MATERIAL. POLYGAS-DS21: 1 imm. ♀. DS22: 1 imm. ♀. DS23: 1 ad. ♂. DS28: 1 ad. ♂, 3 imm. ♀♀. BIOGAS III-DS48: 1 imm. ♂. BIOGAS IV-DS52: 2 imm. ♀♀. BIOGAS VI-DS78: 1 juv. DS79: 2 ad. ♂♂, 1 imm. ♂, 1 ad. ♀, 3 imm. ♀♀, 3 juv. CP23: 5 imm. ♂♂, 15 imm. ♀♀, 5 juv. CP24: 1 imm. ♀.

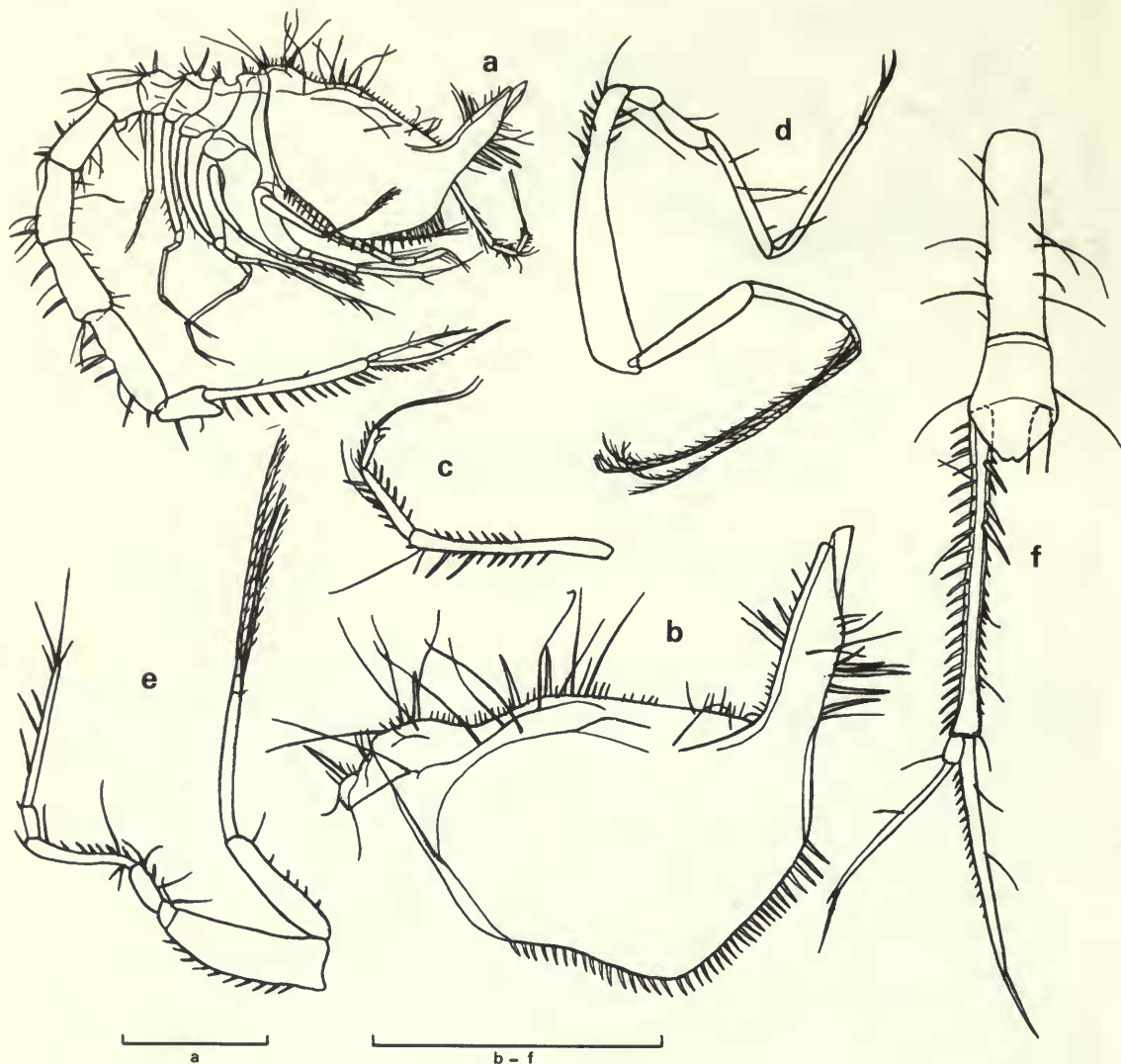


Fig. 12 *Cumella aculeata* ♀, (a) lateral view; (b) carapace from side; (c) antenna 1; (d) pereopod 1; (e) pereopod 2; (f) uropod and end of pleon.

All31-155: 1 ad. ♀, 159: 1 ad. ♂, 1 imm. ♂, 3 ad. ♀♀, 167: 4 imm. ♂♂, 169: 4 imm. ♂♂, 3 ad. ♀♀, 1 imm. ♀, Kn25-288: 1 imm. ♂, 1 imm. ♀, 1 juv. 291: 1 ad. ♀, 2 imm. ♀♀, 293: 1 imm. ♀, 297: 1 imm. ♂, 1 ad. ♀, 299: 3 imm. ♂♂, 1 ad. ♀, 2 imm. ♀♀, 1 juv. 301: 3 imm. ♂♂, 12 ad. ♀♀, 3 imm. ♀♀, 2 juv. 303: 1 juv.

DESCRIPTION. Adult female, length 5.6 mm: carapace (Fig. 12a, b) about $1\frac{1}{2}$ as long as high, its hind end raised and with a long pseudorostrum upturned at nearly a right angle. Some long fragile spines are present mid-dorsally, in two rows at the hind end, and on the pseudorostrum, with many short and some long hair-like setae, but the spines are often broken short in preserved specimens. In some specimens the whole body is covered with short spines. The eyelobe is short and rounded. There is sometimes a row of fairly long and slender fragile spines extending postero-laterally from each antero-lateral angle. Pereon and pleon somites have some long spines and many hairs dorsally and the pleon is fairly long with a short triangular posterior projection.

Antenna 1 (Fig. 12c) very long, the basal segment much longer than the second and third together, the second about twice as long as the third, and all three carrying slender spines of which a few are longer than the remainder. Pereopod 1 (Fig. 12d) with basis armed distally with slender spines, about $\frac{2}{3}$ length of remaining segments together; the propodus distinctly longer than the carpus and more than three times as long as the dactyl. Pereopod 2 (Fig. 12e) with spines on the basis, merus and carpus, the basis less than half as long as remaining segments together; the dactyl is about as long as the carpus and propodus together and more than four times as long as the propodus. Pereopod 5 normally developed. Uropods (Fig. 12f) long, with the peduncle about as long as the last two pleonites together, with rows of long slender spines and some setae, less than $1\frac{1}{2}$ as long as the endopod, which is distinctly longer than the exopod.

Adult male, length 5.7 mm: generally similar to female but the pseudorostrum is proportionately shorter and the antero-lateral angle is broadly rounded and more prominent. The peduncle of antenna 2 has a dense brush of setae and the flagellum reaches only as far as the hind end of the pereon.

TYPE LOCALITY. 08° 12.4' N, 55° 50.2' W, 2487–2500 m. Type specimens deposited in the British Museum (Natural History). Holotype 1982 : 298 : 1, allotype 1982 : 299 : 1, paratypes 1982 : 300 : 3.

REMARKS. This and the following species are easily distinguished from others by their long and upstanding pseudorostrum, long spines dorsally on the carapace and pereon somites and a fairly long and slender pleon. It differs from *C. echinata* sp. nov. (Fig. 13) in several characters: the pseudorostrum is set at a somewhat greater angle with the carapace; the eyelobe is not elongated and there are a number of differences in the armature of the appendages. In the male the second antennal flagellum is shorter than in *C. echinata*.

DISTRIBUTION. Found off Recife and Surinam and in Biscay between 500 and 5000 m depth.

Cumella echinata sp. nov.

(Fig. 13)

MATERIAL. MBAUK-65: 3 ad. ♀♀, 1 imm. ♀. IOS-6696: 6 imm. ♂♂ 14 ad. ♀♀, 1 juv. 6697: 1 imm. ♂, 1 ad. ♀, 2 imm. ♀♀. 6701: 2 ad. ♂♂, 2 imm. ♂♂, 3 ad. ♀♀, 1 imm. ♀. SMBA-ES18: 1 imm. ♂. ES20: 1 ad. ♀. *Thalassa* 73-Z447: 1 imm. ♂. Z451: 1 imm. ♂, 1 juv. BIOGAS VI-DS86: 2 imm. ♂♂, 2 ad. ♀♀. Ch106-313: 7 imm. ♂♂, 9 ad. ♀♀, 8 imm. ♀♀, 6 juv.

DESCRIPTION. Adult female, length 4.6 mm: carapace (Fig. 13a, b) less than twice as long as high with long pseudorostrum upturned at about 70°. Siphon long. There is a mid-dorsal row of spines which are especially long at the front but some spines are scattered all over the carapace and pereon. There is a very long and fragile spine at the antero-lateral angle with a row of more slender spines behind. The eyelobe is very long and narrow, projecting beyond the pseudorostrum. There are four rows of fragile spines on the pleon which is long and fairly slender. Pleonite 6 has a rounded projection between the uropods.

Antenna 1 (Fig. 13b) is long and slender with basal segment nearly three times as long as second and third combined; second with a prominent prolongation at upper end. Pereopod 1 (Fig. 13c) with rows of slender spines on upper and lower edges, about half as long as rest of appendage; propodus narrow, somewhat longer than carpus and more than twice as long as dactyl. Pereopod 2 (Fig. 13d) with basis unarmed, about half as long as rest of appendage; carpus with a row of slender spines on upper edge, distinctly shorter than the dactyl and nearly four times as long as the propodus. Pereopod 5 of normal length. Uropods (Fig. 13e) long, peduncle somewhat shorter than last two pleonites together, with a row of serrations on its outer edge and a row of slender spines on its inner edge; it is more than $1\frac{1}{2}$ as long as the endopod which is only a little longer than the exopod.

The adult male differs from the female in the usual respects. The second antennal flagellum reaches to the end of the pleon.

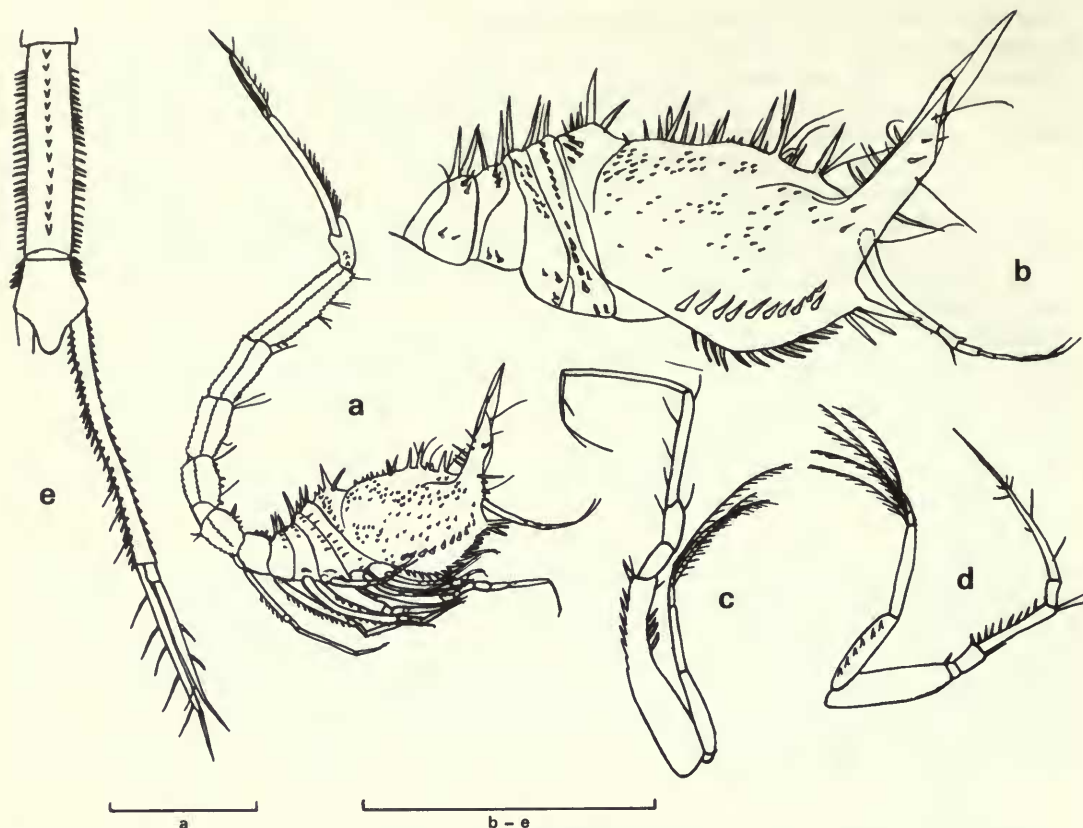


Fig. 13 *Cumella echinata* ♀, (a) lateral view; (b) carapace and pereon from side; (c) pereopod 1; (d) pereopod 2; (e) uropod and end of pleon.

TYPE LOCALITY. 51° 32.2' N, 12° 35.9' W, 1500–1491 m. Type species deposited in the British Museum (Natural History). Holotype 1982 : 301 : 1, allotype 1982 : 302 : 1, paratypes 1982 : 303 : 6.

REMARKS. Generally similar to *C. aculeata*, the more obvious differences have been noted below the description of that species.

DISTRIBUTION. Recorded from the NE. Atlantic, Biscay and Canary Islands from the lower slope, 1271–1950 m depth.

***Cumella concinna* sp. nov.**
(Fig. 14)

MATERIAL. POLYGAS-DS15: 1 ad. ♂. DS16: 1 ad. ♂, 1 imm. ♂, 3 ad. ♀♀. BIOGAS III-DS36: 1 imm. ♂. DS37: 1 imm. ♀. BIOGAS IV-DS51: 2 ad. ♂♂, 2 imm. ♂♂, 1 ad. ♀, 2 imm. ♀♀.

DESCRIPTION. Ovigerous female, length 2.5 mm: carapace (Fig. 14a) fairly short, little more than $1\frac{1}{2}$ as long as deep. Pseudorostrum very short, upturned, with fairly long siphons. Eyelobe short, not reaching end of pseudorostrum, its upper edge serrated. No mid-dorsal spines on carapace but minute serrations. Antero-lateral angle rounded with pointed spines below and serrations above. A transverse row of spines on pereon somites 3 and 4. Pleon somites not very slender with 3 longitudinal rows of short spines, a mid-dorsal and a ventro-lateral on either side. 6th pleonite not much produced posteriorly.

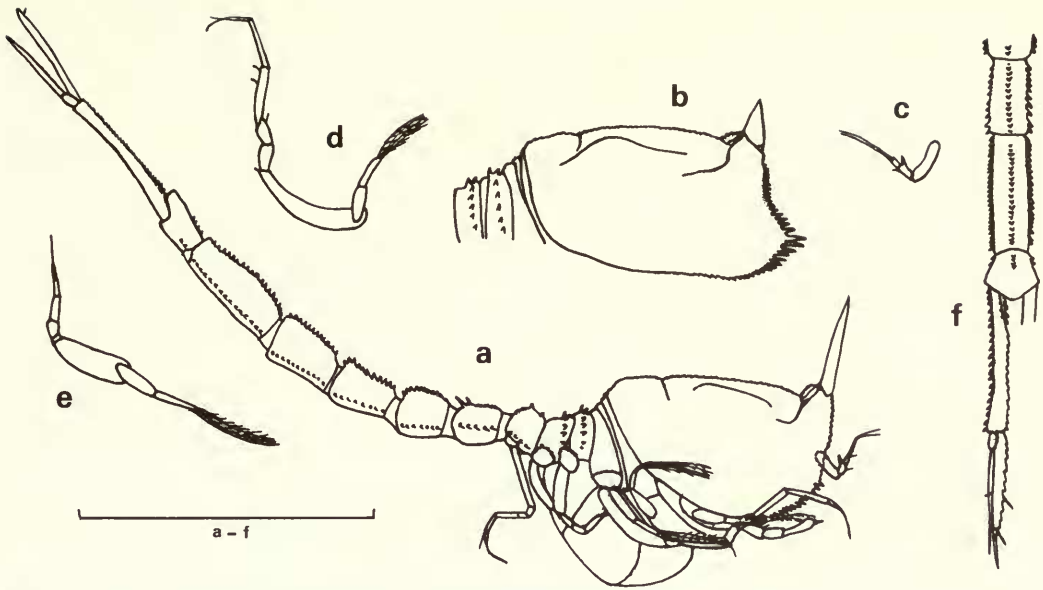


Fig. 14 *Cumella concinna*, (a) ovigerous ♀ from side; (b) adult ♂ carapace from side; (c) ♀ antenna 1; (d) pereopod 1; (e) pereopod 2; (f) ♀ uropod and end of pleon.

Antenna 1 (Fig. 14c) short; basal segment little more than twice as long as second, which has pronounced projection almost as long as third segment. Pereopod 1 (Fig. 14d) with basis more than half as long as remainder, carpus slightly longer than propodus and about twice as long as dactyl. Pereopod 2 (Fig. 14e) with basis about as long as other segments together, carpus longer than subequal propodus and dactyl. Pereopod 5 well developed. Uropod (Fig. 14f) moderately long with peduncle and inner edge of endopod serrated, the peduncle nearly three times as long as pleonite 6; endopod only a little longer than exopod, with few spines.

Adult male (Fig. 14b) with antero-lateral corner projecting well forward of pseudo-rostrum, with sharp spines above and below.

TYPE LOCALITY. 47° 36.1' N, 8° 40.5' W, 2325 m. Type specimens deposited in the Museum National d'Histoire Naturelle, Paris. Holotype ♀ no. Cu 202, allotype ♂ Cu 203, paratypes Cu 204.

REMARKS. *C. concinna* may be distinguished from other species in the genus by the combination of a short, sharply upturned pseudo-rostrum, carapace serrated mid-dorsally and at the front but without prominent spines, eyelobe rounded, not elongated, and serrated dorsally, and three rows of many short spines mid-dorsally and laterally on the pleon somites.

DISTRIBUTION. Found at present only in Biscay near the lower edges of the slope, 2110–2430 m.

Cumella exstans sp. nov
(Fig. 15)

MATERIAL. BIOGAS VI-DS74: 1 ad. ♀. DS76: 1 imm. ♀. DS79: 1 ad. ♂, 1 imm. ♂, 2 ad. ♀♀, 2 imm. ♀♀. CP09: 1 imm. ♀. AII31-142: 1 ad. ♂, 4 imm. ♂♂, 8 ad. ♀♀, 1 imm. ♀. 162: 1 ad. ♂, 1 imm. ♂, 2 ad. ♀♀. 169: 1 ad. ♂, 3 imm. ♂♂, 7 ad. ♀♀. AII42-202: 1 ad. ♀. Kn25-293: 3 ad. ♂♂, 6 ad. ♀♀.

DESCRIPTION. Adult ovigerous female, length 2.3 mm: carapace (Fig. 15a) shape generally similar to that of *C. erecta* but pseudo-rostrum much shorter; eyelobe a little elongated. No

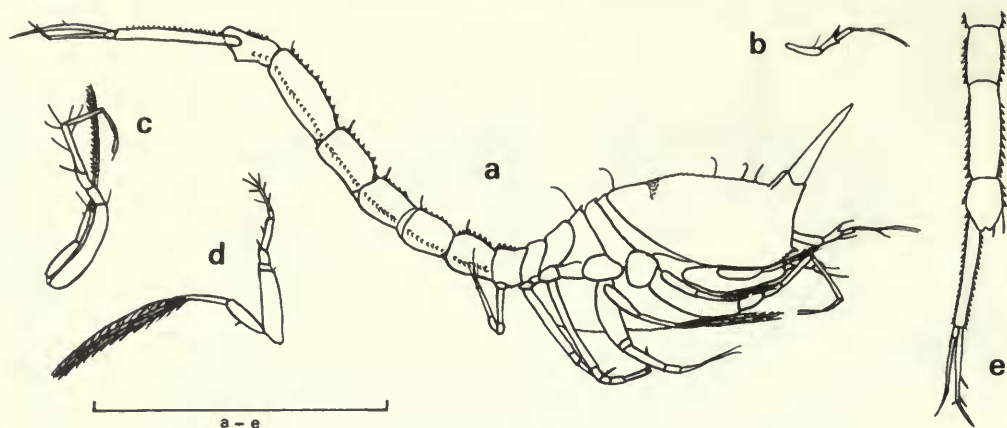


Fig. 15 *Cumella exstans* ovigerous ♀, (a) lateral view; (b) antenna 1; (c) pereopod 1; (d) pereopod 2; (e) uropod and end of pleon.

spines on carapace except small ones ventro-laterally but some setae. Pleon somites less slender than in *C. erecta* and with three longitudinal rows of hyaline serrations mid-dorsally and laterally; pleonite 6 not elevated posteriorly and moderately projecting between the uropods.

Antenna 1 (Fig. 15b) moderately long, with basal segment less than twice as long as second, which has a pronounced dorsal projection. Pereopod 1 (Fig. 15c) with basis slightly more than half as long as remaining segments together; carpus longer than propodus which is longer than dactyl. Pereopod 2 (Fig. 15d) with basis not much shorter than rest of appendage; carpus longer than dactyl. Pereopod 5 well developed and of normal length. Uropods (Fig. 15e) not very slender with peduncles serrated and about twice as long as pleonite 6 and $1\frac{1}{2}$ as long as endopod.

TYPE LOCALITY. 8° 58' N, 54° 04.3' WE, 1456–1518 m. Type specimens deposited in the British Museum (Natural History). Holotype 1982 : 304 : 1, allotype 1982 : 305 : 1, paratypes 1982 : 306 : 4.

REMARKS. The combination of a short, sharply upturned pseudorostrum, carapace without spines but serrated dorsally, eyelobe a little elongated but not projecting beyond the tip of the pseudorostrum and three rows of many spines on the pleon somites distinguishes this species. It somewhat resembles *C. concinna* but differs in the shape of the eyelobe and the lack of a transverse row of spines on the posterior pereonites.

DISTRIBUTION. From mid-slope to abyssal plain on both sides of Atlantic from the tropics northwards to Biscay, 587 to 4715 m.

***Cumella dayae* sp. nov**
(Fig. 16)

MATERIAL. All42-201: 2 imm. ♀♀, 1 juv. 202: 1 imm. ♂, 4 juv. All60-245: 8 imm. ♂♂, 26 ad. ♀♀, 15 imm. ♀♀.

DESCRIPTION. Adult female, length 3.7 mm: carapace (Fig. 16a, b) fairly short, little more than $1\frac{1}{2}$ as long as high, slightly raised posteriorly, with about 8 mid-dorsal spines and a few hairs. The eyelobe reaches to the tip of the pseudorostrum which is not very long. Antero-lateral angle marked by a fairly prominent tooth, with a series of slight serrations behind. There are no spines on the pereon or the fairly slender pleon but pereonites 1 and 2 are produced dorsally. Pleonite 6 has a rounded backward projection between uropod peduncles.

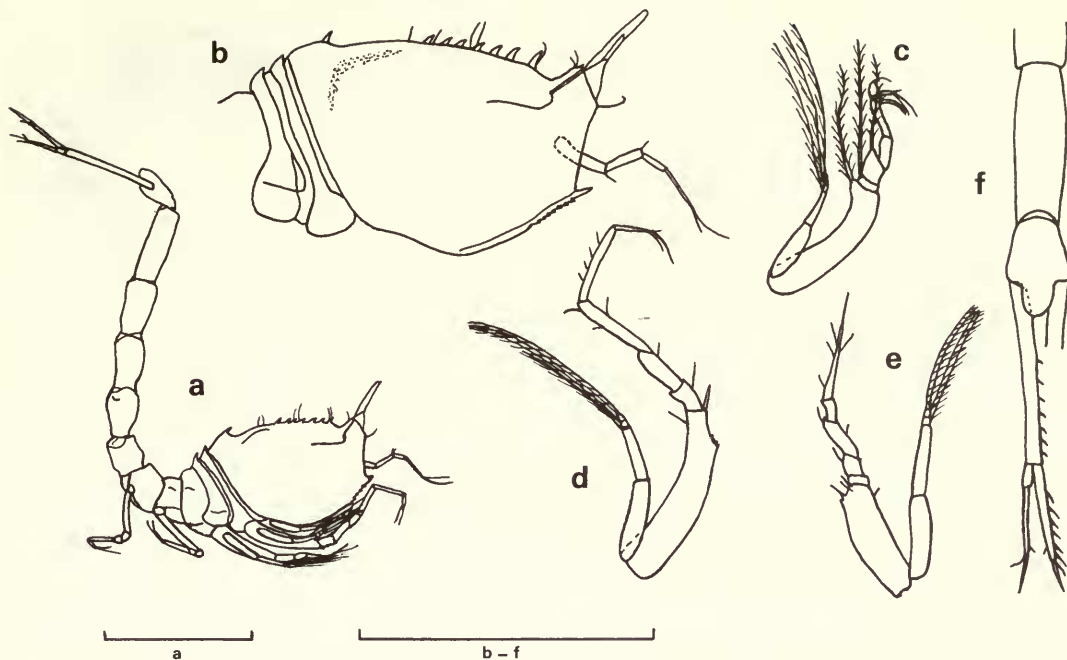


Fig. 16 *Cumella dayae* ♀, (a) lateral view; (b) carapace from side; (c) maxilliped 3; (d) pereopod 1; (e) pereopod 2; (f) uropod and end of pleon.

Antenna 1 (Fig. 16b) fairly long and slender, its basal segment a little shorter than the second and third together. Maxilliped 3 (Fig. 16c) with the basis slightly produced distally; merus broadened. Pereopod 1 (Fig. 16d) with basis with a few teeth on lower distal edge, not much more than half as long as remaining segments together; carpus and propodus subequal and each more than twice as long as dactyl. Pereopod 2 (Fig. 16e) with a few distal teeth on basis which is about $\frac{3}{4}$ length of remaining segments together, its dactyl a little longer than the carpus which is twice as long as the propodus. Pereopod 5 of normal length. Uropods (Fig. 16f) fairly slender, peduncles armed only with a series of short setae, distinctly shorter than pleonites 5 and 6 combined, barely twice as long as endopod, which is only a little longer than the exopod.

TYPE LOCALITY. 36° 55.7' S, 53° 01.4' W, 2707 m. Type specimens deposited in the British Museum (Natural History). Holotype 1982 : 307 : 1, paratypes 1982 : 308 : 8.

REMARKS. *C. dayae* has a short, fairly sharply upturned pseudorostrum, carapace with a single row of 8 mid-dorsal spines, eyelobe narrow and moderately elongated, and pleon unarmed.

DISTRIBUTION. Many off the Argentine coast and a few off SW. Africa, 1427–2707 m.

***Cumella subducta* sp. nov.**

(Fig. 17)

MATERIAL. SMBA-ES12: 1 imm. ♂, 3 imm. ♀♀. ES14: 1 ad. ♀. ES18: 4 ad. ♂♂, 3 imm. ♂♂, 9 ad. ♀♀. ES20: 3 ad. ♂♂, 3 imm. ♂♂, 6 ad. ♀♀, 3 imm. ♀♀. ES22: 1 ad. ♂, 2 ad. ♀♀. BIOGAS I-DS13: 2 ad. ♀♀. POLYGAS-DS15: 1 ad. ♂, 3 imm. ♂♂, 6 ad. ♀♀, 1 imm. ♀. DS16: 1 imm. ♂, 2 ad. ♀♀. DS18: 2 ad. ♂♂, 1 imm. ♂, 8 ad. ♀♀. BIOGAS III-DS35: 2 imm. ♀♀. BIOGAS VI-DS86: 1 ad. ♀.

DESCRIPTION. Adult female, length 2.8 mm: carapace (Fig. 17a,b) fairly short, about $1\frac{1}{2}$ as long as deep, with a short pseudorostrum abruptly upturned at almost a rightangle. Siphons

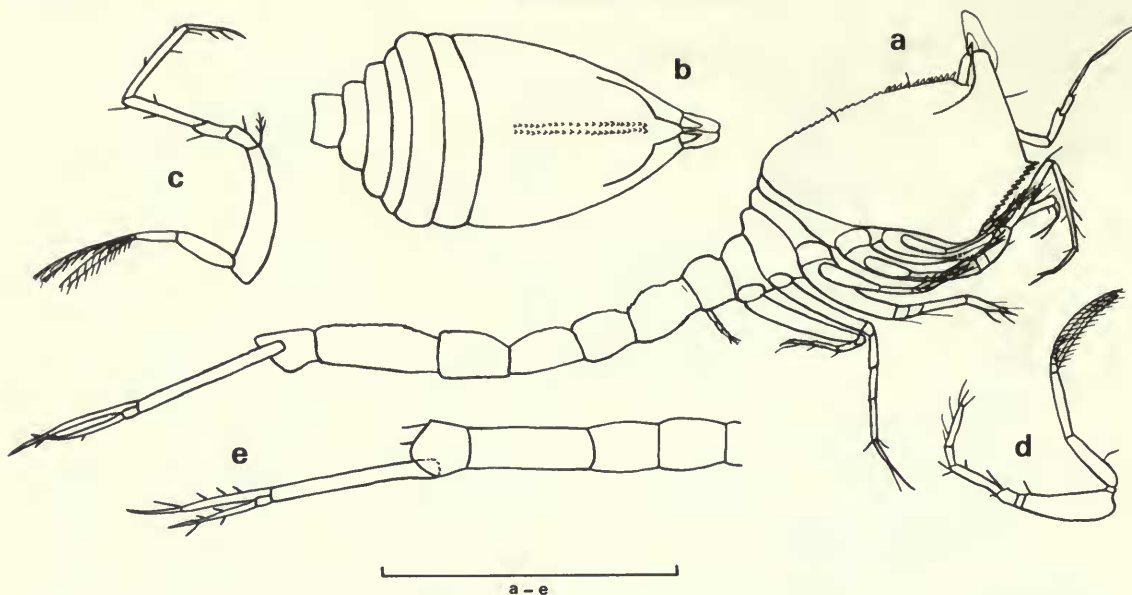


Fig. 17 *Cumella subducta* ♀, (a) lateral view; (b) carapace and pereon from above; (c) pereopod 1; (d) pereopod 2; (e) uropod and end of pleon.

short. There is a mid-dorsal double row of numerous short spines, the two rows set close together. The eyelobe is broad at the base and not very long, with a terminal spine. The antero-lateral angle is marked by a spine with a row behind it along the ventro-lateral border. Pereon and pleon are unarmed apart from a faint serration mid-dorsally along the pleon somites. Pleonite 6 triangular behind and little produced.

Antenna 1 (Fig. 17a) of moderate length with basal segment somewhat shorter than second and third combined, the second fairly stout with a short upper distal projection. Pereopod 1 (Fig. 17c) with basis half as long as remainder of appendage; propodus longer than carpus and more than twice as long as dactyl. Pereopod 2 (Fig. 17d) with basis about $\frac{3}{4}$ as long as remaining segments together; dactyl shorter than carpus but twice as long as propodus. Pereopod 5 is normally very short and rudimentary but may be longer in some specimens. Uropod (Fig. 17e) of moderate length, basis with edges only faintly serrated, nearly as long as pereon somites 5 and 6 together and about twice as long as endopod, which is distinctly longer than the exopod.

TYPE LOCALITY. 47° 35.2' N, 8° 40.1' W, 2246 m. Type specimens deposited in the Museum National d'Histoire Naturelle, Paris. Holotype ♀ no. Cu 205, allotype ♂ Cu 206, paratypes Cu 207.

REMARKS. *C. subducta* resembles *C. dayae* in its general appearance but the pseudorostrum is more upturned from the horizontal, there is a double row of small spines on the dorsum of the carapace and the eyelobe is broad at the base with a terminal spine projecting beyond the tip of the pseudorostrum.

DISTRIBUTION. Many specimens obtained from the NE. Atlantic and Biscay on the lower slope and beyond, 1028–2325 m depth.

Cumella angustata sp. nov.
(Fig. 18)

MATERIAL. AII31-167: 7 imm. ♂♂, 10 ad. ♀♀, 2 juv.

DESCRIPTION. Adult female, length 3.5 mm: carapace (Fig. 18a,b) more than twice as long

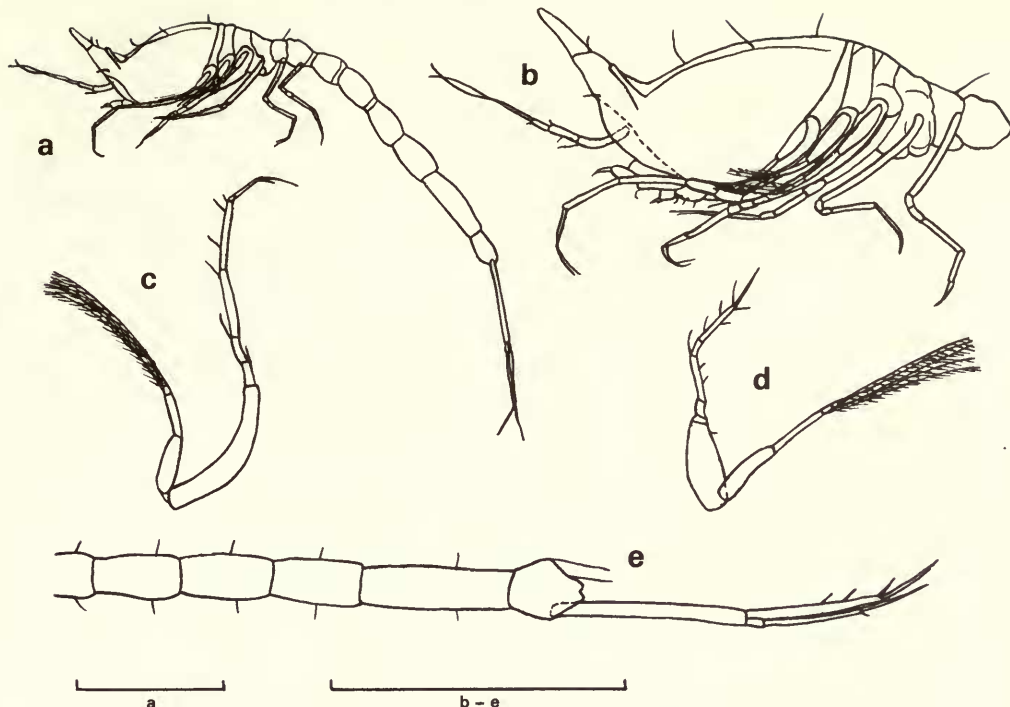


Fig. 18 *Cumella angustata* ♀, (a) lateral view; (b) carapace and pereon from side; (c) pereopod 1; (d) pereopod 2; (e) uropod and end of pleon.

as deep, unarmed except for a few long hairs dorsally. Pseudorostrum fairly long and upturned at about 45°. Siphons fairly long. Eyelobe long and narrow but much shorter than pseudorostrum. Antero-lateral border little excavated, with no antero-lateral angle nor serrations visible. Pereon and pleon somites unarmed, pleon long, with 6th somite produced backwards in triangular shape.

Antenna 1 (Fig. 18b) fairly long, with basal segment nearly twice as long as second, which in turn is nearly twice as long as third. Pereopod 1 (Fig. 18c) slender with basis curved, barely $\frac{2}{3}$ as long as remaining segments together; carpus and propodus about equal in length and each nearly twice as long as dactyl. Pereopod 2 (Fig. 18d) with basis broad, about $\frac{2}{3}$ as long as rest of appendage; carpus and dactyl about equal in length and each more than twice as long as propodus. Uropods (Fig. 18e) long and slender, with peduncles unarmed, somewhat shorter than pleonites 5 and 6 together and about $1\frac{1}{3}$ as long as the slender endopod, which is considerably longer than the exopod.

TYPE LOCALITY. 07° 58' S–07° 50' S, 34° 17' W, 943–1007 m. Type specimens deposited in the British Museum (Natural History). Holotype 1982 : 309 : 1, paratypes 1982 : 310 : 3.

REMARKS. *C. angustata* has a fairly long pseudorostrum upturned at about 45° from the carapace which is unarmed apart from a few hairs, eyelobe narrow and elongated but much shorter than the pseudorostrum, pereon and pleon without spines or serrations.

DISTRIBUTION. Collected only from mid-slope off Recife, 943–1007 m depth.

Cumella erecta sp. nov.

(Fig. 19)

MATERIAL. MBAUK-65: 3 ad. ♀♀. IOS-6709: 1 ad. ♀. SMBA-ES10: 15 ad. ♂♂, 2 imm. ♂♂, 81 ad. ♀♀, 60 imm. ♀♀, 37 juv. ES12: 3 ad. ♂♂, 1 ad. ♀, 4 imm. ♀♀. ES15: 2 ad. ♂♂, 2 imm. ♂♂, 2 ad. ♀♀, 7 imm.

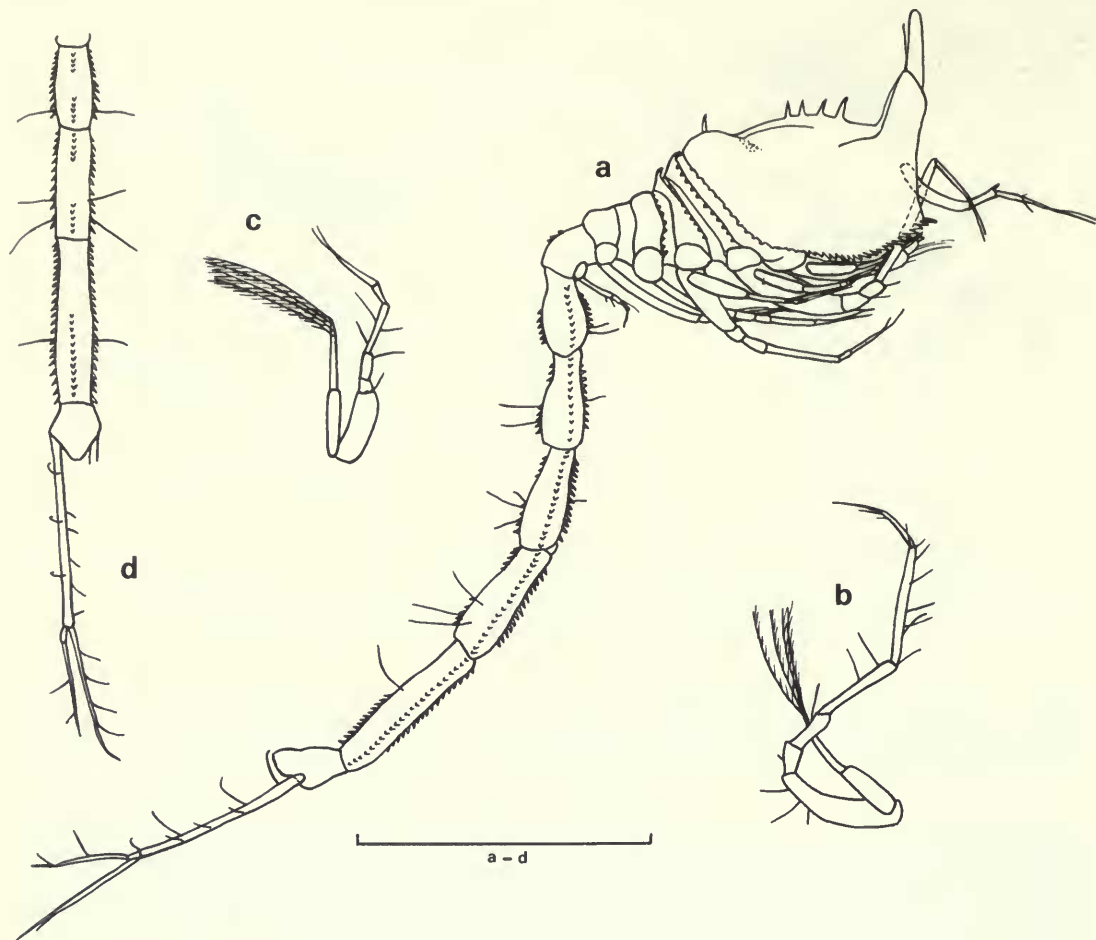


Fig. 19 *Cumella erecta* ♀, (a) lateral view; (b) pereopod 1; (c) pereopod 2; (d) uropod and end of pleon.

♀♀. POLYGAS-DS15: 5 ad. ♂♂, 4 imm. ♂♂, 25 ad. ♀♀, 2 imm. ♀♀. DS16: 1 ad. ♂. DS17: 1 imm. ♂, 3 imm. ♀♀. DS18: 1 imm. ♂, 2 ad. ♀♀. BIOGAS III-DS35: 1 imm. ♂. AII31-142: 1 ad. ♂, 5 imm. ♂♂, 3 ad. ♀♀, 1 imm. ♀, 1 juv. AII42-191: 1 imm. ♀. 202: 1 imm. ♀. Ch106-313: 1 ad. ♀, 2 juv.

DESCRIPTION. Adult female with empty marsupium, length 3.4 mm: carapace (Fig. 19a) similar in shape to that of *C. egregia* Hansen (Fig. 5) but with fewer dorsal spines and with shorter siphons. The pseudorostrum is fairly long and bent upwards at nearly a right angle to the dorsum of the carapace. The eyelobe is narrow and elongated to the tip of the pseudorostrum. There may be some long setae on the carapace and pleon somites. The latter are slender and have four longitudinal rows of short hyaline spines which are sometimes difficult to see. The 6th pleonite is raised and protrudes backwards between the uropods.

Antenna 1 (Fig. 19a) long and slender with the basal segment three times as long as the second, which has a pronounced projection as its upper distal end. Pereopod 1 (Fig. 19b) with the basis slender and little more than one third as long as the remaining segments together; the propodus is longer than the carpus and twice as long as the dactyl which ends in a slender curved spine. Pereopod 2 (Fig. 19c) with the more distal segments together about two and a half times as long as the basis; the dactyl is longer than the carpus and about four times as long as the propodus. Pereopod 5 is reduced in size and almost rudimentary.

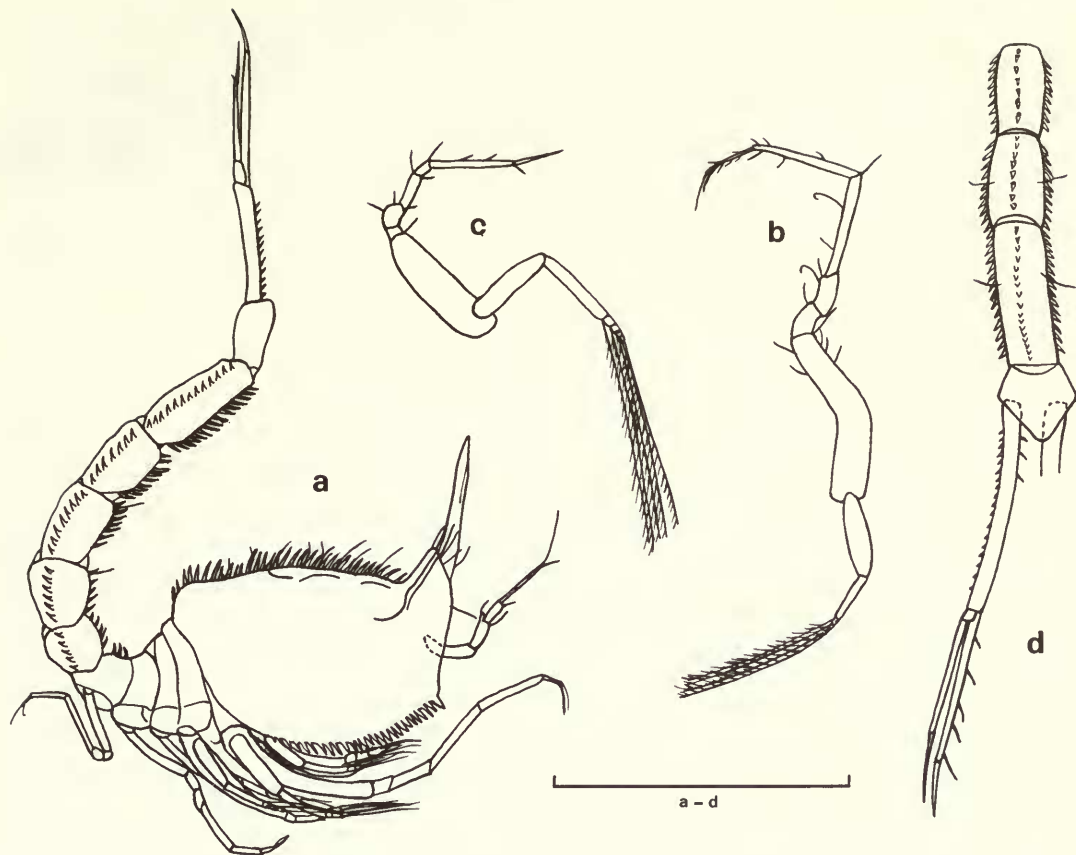


Fig. 20 *Cumella formosa* ♀, (a) lateral view; (b) pereopod 1; (c) pereopod 2; (d) uropod and end of pleon.

Uropods (Fig. 19d) long and slender, with the peduncle three times as long as the 6th pleonite and about twice as long as the endopod. They are unarmed except for some slender spines.

Adult male with eyelobe shorter than in female and pseudorostrum less upturned.

TYPE LOCALITY. 47° 35.2' N, 8° 40.1' W, 2246 m. Type specimens deposited in the Museum National d'Histoire Naturelle, Paris. Holotype ♀ no. Cu 208, allotype ♂ Cu 209, paratypes Cu 210.

REMARKS. *C. erecta* is evidently closely related to *C. egregia* Hansen (Fig. 5) but differs in having fewer but more prominent mid-dorsal spines on the carapace, a more erect pseudorostrum and no spines on the peduncles of the uropods.

DISTRIBUTION. An inhabitant of the lower slope, recorded between 1500 and 2351 m along the eastern side of the Atlantic.

Cumella formosa sp. nov.
(Fig. 20)

MATERIAL. All60-245: 1 imm. ♂, 6 ad. ♀♀, 2 imm. ♀♀.

DESCRIPTION. Adult female, length 3.0 mm: carapace (Fig. 20a) not much more than $1\frac{1}{2}$ as long as deep. Pseudorostrum fairly short, upturned at more than 45°. Eyelobe fairly long, reaching to end of pseudorostrum. A double row of numerous fairly long spines mid-dorsally

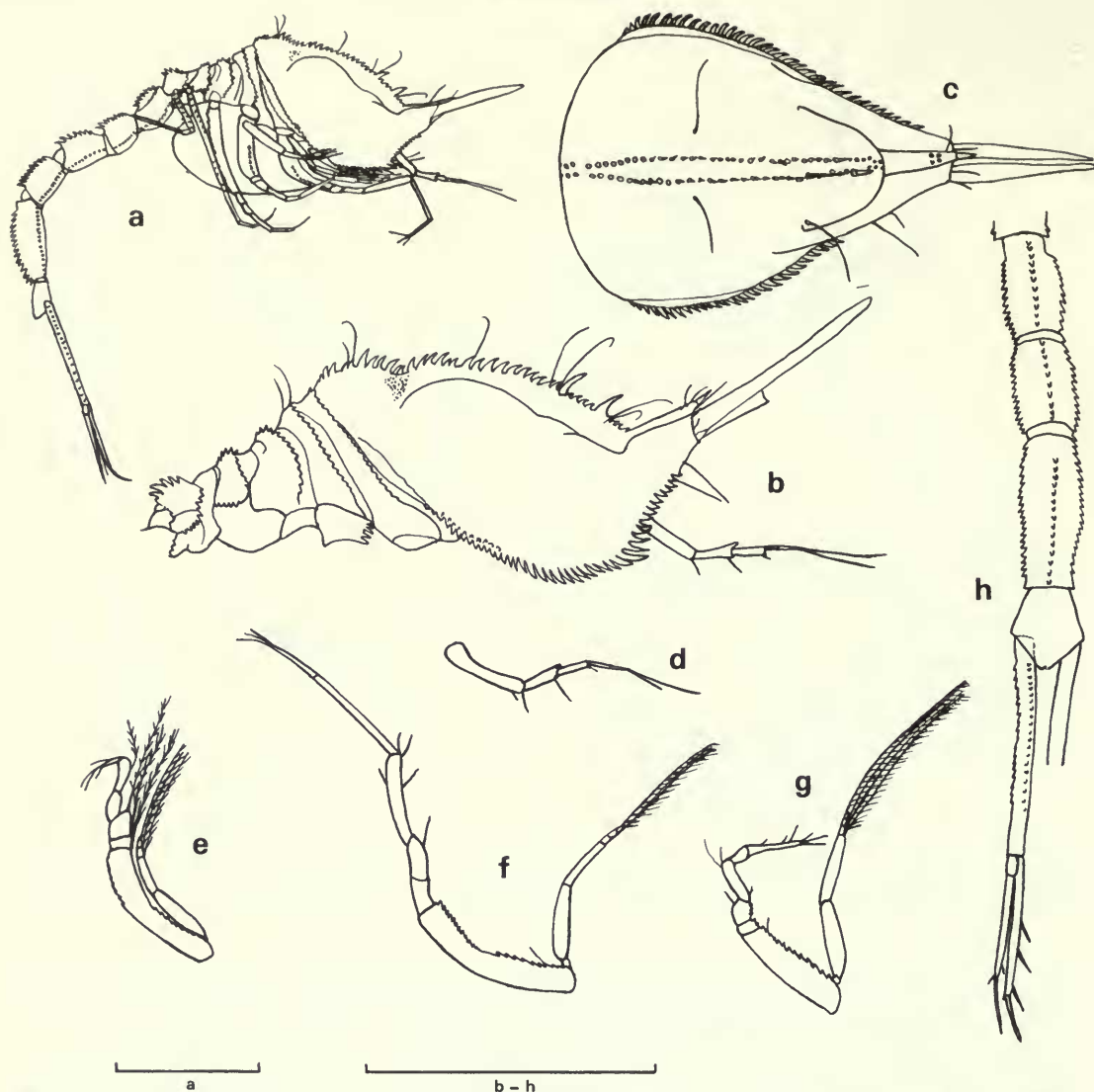


Fig. 21 *Cumella bishopi* ovigerous ♀, (a) lateral view; (b) carapace and pereon from side; (c) carapace from above; (d) antenna 1; (e) maxilliped 3; (f) pereopod 1; (g) pereopod 2; (h) uropod and end of pleon.

on carapace, and some hairs. Antero-lateral angle marked by a prominent spine with a row of sharp spines below and behind it. Pleon somites fairly stout, with mid-dorsal and ventro-lateral rows of fairly long spines. Pleonite 6 with triangular backward projection.

Antenna 1 (Fig. 20a) fairly long, with proximal segment about as long as second and third together, second rather broad with short distal projection, a little longer than third segment. Pereopod 1 (Fig. 20b) with basis a little more than half as long as remaining segments combined, its carpus and propodus equal in length and each more than twice as long as the dactyl. Pereopod 2 (Fig. 20c) with basis two thirds as long as remaining segments together, its dactyl twice as long as the carpus and five times as long as the propodus. Pereopod 5 normally developed. The uropods (Fig. 20d) fairly long, the peduncle serrated on the outer side and nearly as long as the last two pleonites together, the endopod somewhat shorter but distinctly longer than the exopod.

TYPE LOCALITY. 36° 55.7' S, 53° 01.4' W, 2707 m. Type specimens deposited in the British Museum (Natural History). Holotype 1982 : 311 : 1, paratypes 1982 : 312 : 3.

REMARKS. Of the species of *Cumella* with a long narrow eyelobe, the pseudorostrum strongly upturned and with rows of spines on the pleon somites, only *C. formosa*, *C. bishopi* sp. nov. (Fig. 21) and *C. antipai* (Bacescu & Muradian) (Fig. 6) have a double row of spines mid-dorsally on the carapace. *C. formosa* differs from *C. antipai* in its shorter pseudorostrum and siphon, lack of lateral spines on the carapace and of a mid-ventral spine row on the pleon somites. From *C. bishopi* it differs in the shape of the carapace and lack of lateral spine rows on the pereon.

DISTRIBUTION. 9 specimens were collected from 2707 m off the Argentine coast.

Cumella bishopi sp. nov.
(Fig. 21)

MATERIAL. Kn25-293: 2 ad. ♂♂, 24 imm. ♂♂, 51 ad. ♀♀, 23 imm. ♀♀.

DESCRIPTION. Ovigerous female, length 4.2 mm: carapace (Fig. 21a-c) fairly long, twice as long as high, with a moderately long pseudorostrum upturned at about 35° from the dorsum. Siphon long. A double row of numerous hooked spines with a few longer spines at the front extends back from the base of the eyelobe to the rear of the carapace. There is a row of hooked spines on either side starting above the antero-lateral angle and extending back postero-laterally. The eyelobe is as long as the pseudorostrum with a stout spine projecting forwards beyond it. The carapace has a few long hairs. Transverse rows of spines are present on the pereon and the moderately long pleon has three longitudinal rows. Pleonite 6 is triangular behind and not much produced.

Antenna 1 (Fig. 21d) is fairly long, the basal segment about as long as the second and third together, the second longer than the third and with a short distal projection. The basis of maxilliped 3 (Fig. 21e) is serrated basally above and distally below, without any distal projection, and the merus is fairly broad. Pereopod 1 (Fig. 21f) has a row of spines above on the basis which is a little more than half as long as the rest of the appendage; the propodus is distinctly longer than the carpus and twice as long as the dactyl. Pereopod 2 (Fig. 21g) has a row of spines on the upper edge of the basis, ischium and merus; the basis is about $\frac{3}{4}$ as long as the remainder of the appendage; the dactyl is longer than the carpus and more than twice as long as the propodus. Pereopod 5 is not particularly short. The uropod (Fig. 21h) is fairly long, with two rows of short spines on its peduncle, which is nearly as long as the last two pleonites together and about $1\frac{1}{2}$ times as long as the endopod, this being distinctly longer than the exopod.

The adult male has no spines dorsally and the antero-lateral angle is not specially prominent but rounded and produced.

TYPE LOCALITY. 8° 58' N, 54° 04.3' W, 1456-1518 m. Type specimens deposited in the British Museum (Natural History). Holotype 1982 : 313 : 1, allotype 1982 : 314 : 1, paratypes 1982 : 315 : 10.

REMARKS. *C. bishopi* resembles *C. formosa* in having a double row of spines mid-dorsally on the female carapace but the pseudorostrum is upturned at a smaller angle to the dorsal line of the carapace, which is longer and less deep in proportion. Some of the mid-dorsal spines towards the front of the carapace are more robust than the remainder and a further difference is the extension of the ventro-lateral row of spines on either side above the antero-lateral angle.

DISTRIBUTION. Recorded from Surinam from the lower slope at 1500 m depth.

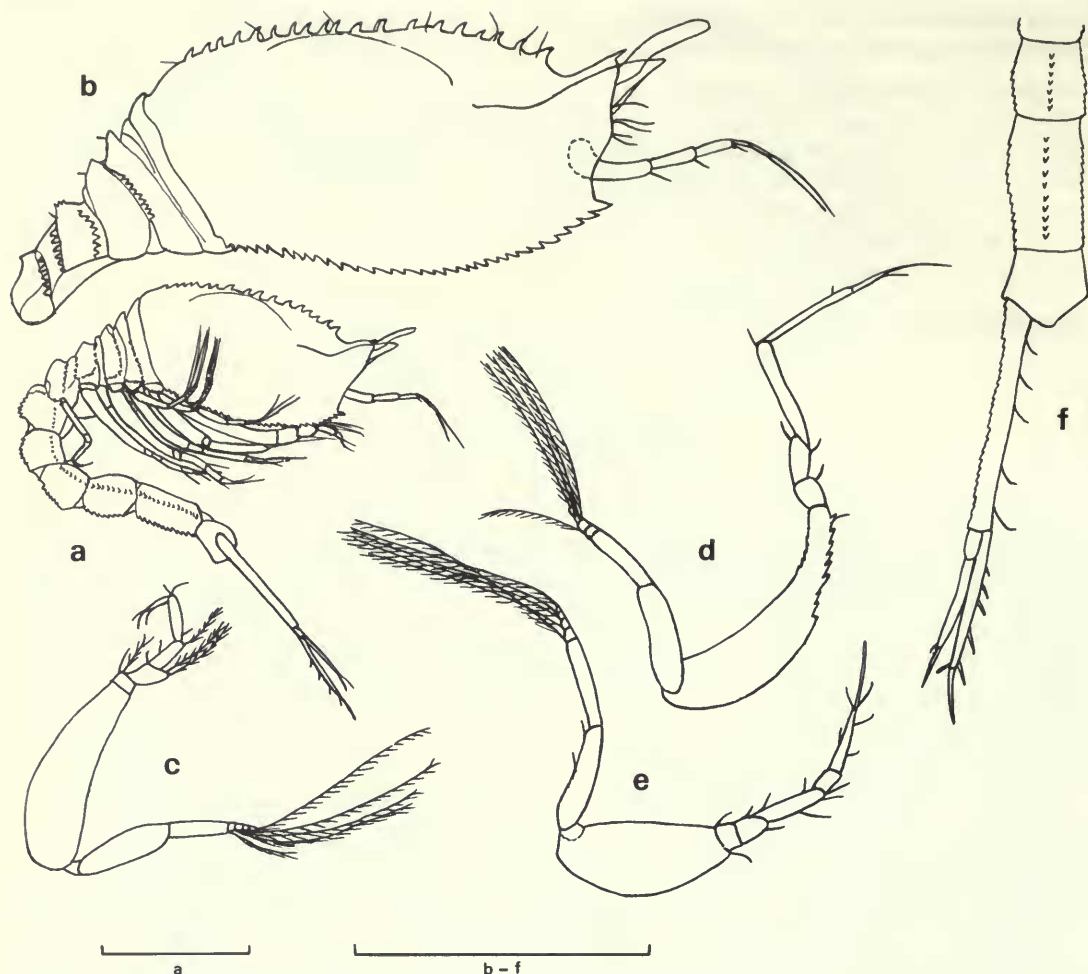


Fig. 22 *Cumella cristata* ♀, (a) lateral view; (b) carapace and pereon from side; (c) maxilliped 3; (d) pereopod 1; (e) pereopod 2; (f) uropod and end of pleon.

Cumella cristata sp. nov
(Fig. 22)

MATERIAL. POLYGAS-DS22: 2 ad. ♀♀. BIOGAS III-DS41: 3 imm. ♂♂, 4 ad. ♀♀.

DESCRIPTION. Adult female, length 4.3 mm: carapace (Fig. 22a, b) long, about twice as long as high, with a mid-dorsal crest of small teeth irregularly doubled extending from behind the eyelobe almost to the hind end. Pseudorostrum not very long, little upturned, and eyelobe reaching to its end with a spine projecting beyond it. Antero-lateral angle marked by a spine with a slight excavation above and a row of strong serrations below and behind. Pereon somites with lateral rows of short spines. Pleon somites fairly stout, serrated laterally and mid-dorsally. Pleonite 6 with short triangular projection posteriorly.

Antenna 1 (Fig. 22b) fairly long, with basal segment about as long as second and third together, the second a little longer than the third and without a distal projection. Maxilliped 3 (Fig. 22c) has no distal projection; the merus is broadened. Pereopod 1 (Fig. 22d) with basis serrated distally above and below, about $\frac{3}{4}$ as long as more distal segments together; the carpus and propodus about equal in length and each more than twice as long as the

dactyl. Pereopod 2 (Fig. 22e) with basis stout, a little shorter than remaining segments together; the dactyl a little shorter than the carpus and three times as long as the propodus. Pereopod 5 of normal length. Uropod (Fig. 22f) fairly long, with peduncle serrated on outer edge, and some fairly long setae on the inner edge, longer than last two pleonites together and much less than twice as long as the endopod, which is distinctly longer than the exopod.

TYPE LOCALITY. 47° 28.3' N, 9° 07.2' W, 3548 m. Type specimens deposited in the Museum National d'Histoire Naturelle, Paris. Holotype ♂ no. Cu 211, paratypes Cu. 212.

REMARKS. *C. cristata* and *C. longisipho* sp. nov. (Fig. 23) have the mid-dorsal spine row on the female carapace irregularly doubled but the pseudorostrum is not strongly upturned from the distal line of the carapace. In *C. cristata* the carapace is much more elongated than in *C. longisipho* and the pseudorostrum is not short, the eyelobe not projecting far beyond its tip.

DISTRIBUTION. An abyssal species, recorded from the Biscay area between 3548 and 4144 m depth.

Cumella longisipho sp. nov.

(Fig. 23)

MATERIAL. POLYGAS-DS20: 1 ad. ♂, 1 imm. ♂, 1 ad. ♀, 2 imm. ♀. BIOGAS IV-DS55: 2 imm. ♂♂, 3 ad. ♀♀, 1 imm. ♀, BIOGAS VI-DS78: 2 ad. ♀♀, 1 imm. ♀.

DESCRIPTION. Adult female, length 3.9 mm: carapace (Fig. 23a, b) little more than $1\frac{1}{2}$ as long as deep; dorsal outline irregular, with numerous broad hyaline spines set irregularly in two rows, and a few scattered hairs; the spines are often broken off. Pseudorostrum short, a little upturned. Siphons long. Eyelobe narrowed, longer than pseudorostrum. Antero-lateral angle marked by a hyaline spine followed by faint serrations. Pereon unarmed but first three somites somewhat raised dorsally. Pleon not very long, with a mid-dorsal and on either side a lateral row of faint hyaline serrations, sometimes scarcely visible. Pleonite 6 rounded posteriorly but little produced.

Antenna 1 (Fig. 23b) fairly long with basal segment nearly twice as long as second. Pereopod 1 (Fig. 23c) with basis about $\frac{3}{4}$ as long as rest of appendage; carpus distinctly longer than propodus and more than twice as long as dactyl. Pereopod 2 (Fig. 23d) with basis about $\frac{2}{3}$ as long as rest of appendage; carpus a little longer than dactyl and about three times as long as propodus. Uropods (Fig. 23e) fairly long, peduncle about as long as pleonites 5 and 6 together and $1\frac{1}{2}$ as long as the narrow endopod, which is distinctly longer than the exopod.

TYPE LOCALITY. 46° 31.2' N, 10° 23.8' W. 4706 m. Type specimens deposited in the Museum National d'Histoire Naturelle, Paris. Holotype ♀ no. Cu 213, allotype ♂ Cu 214, paratypes Cu 215.

REMARKS. *C. longisipho* has a short pseudorostrum with the eyelobe projecting well beyond it. The siphon is exceptionally long. There are fewer mid-dorsal spines on the carapace than in *C. cristata*.

DISTRIBUTION. Found at present only from the Biscay area in very deep water, from 4125–4706 m.

Cumella spicata sp. nov.

(Fig. 24)

MATERIAL. IOS-6701: imm. ♀.

DESCRIPTION. Immature female, length 3.7 m: carapace (Fig. 24a, b) twice as long as high with a single long forward-curving spine mid-dorsally behind the eyelobe and numerous long hairs. The pseudorostrum is long and acutely pointed and somewhat curved upwards. The siphons are not very long. The eyelobe is rudimentary and not at all elongated. The antennal

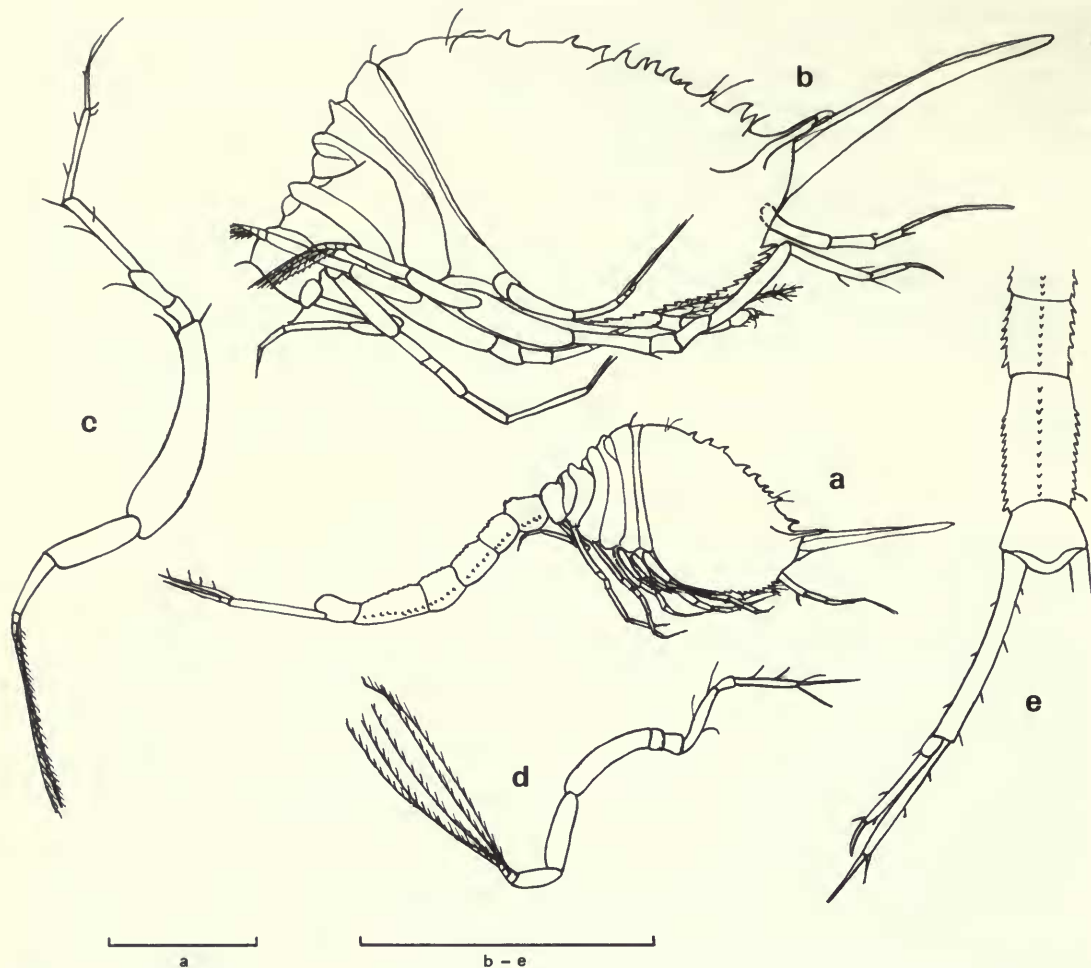


Fig. 23 *Cumella longisipho* ♀, (a) lateral view; (b) carapace and pereon from side; (c) pereopod 1; (d) pereopod 2; (e) uropod and end of pleon.

notch is excavated and the antero-lateral angle marked by a spine followed by a short row of serrations. There are a few strong spines dorsally on the pereon somites and these and the fairly long pleon have numerous hairs. The 6th pleonite is rounded behind and not much produced.

Antenna 1 with basal segment strongly curved, distinctly longer than the subequal second or third segments. Maxilliped 3 (Fig. 24c) with basis short and stout, little more than half as long as remaining segments together; ischium and merus broad; propodus longer than carpus and about twice as long as dactyl. Pereopod 1 (Fig. 24d) with basis about half as long as more distal segments together; carpus a little longer than propodus and about twice as long as dactyl. Pereopod 2 (Fig. 24e) with basis about as long as rest of appendage; the carpus is a little longer than the dactyl and about $1\frac{1}{2}$ as long as the propodus. Uropods (Fig. 24f) comparatively short, the peduncle barely as long as pleonite 6 and less than $1\frac{1}{2}$ as long as the endopod, which is distinctly longer than the exopod.

TYPE LOCALITY. $27^{\circ} 45.2' \text{ N}$, $14^{\circ} 13' \text{ W}$, 1934 m. The holotype deposited in the British Museum (Natural History). 1982 : 316 : 1.

REMARKS. Of the deep sea species of *Cumella* so far collected with the pseudorostrum

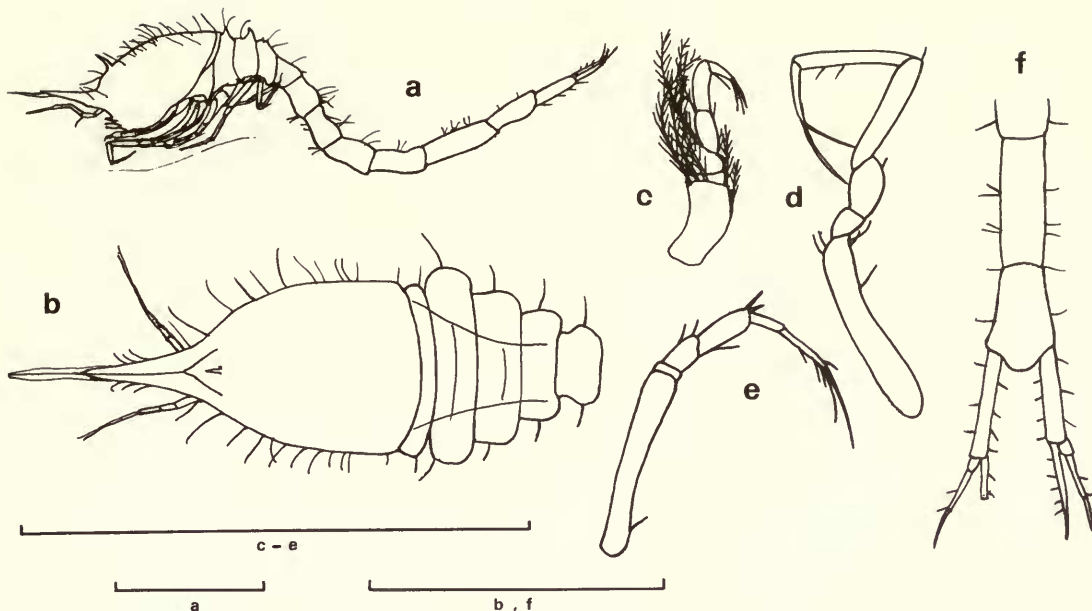


Fig. 24 *Cumella spicata* immature ♀, (a) lateral view; (b) carapace and pereon from above; (c) maxilliped 3; (d) pereopod 1; (e) pereopod 2; (f) uropods and end of pleon.

not strongly upturned and the eyelobe not doubled nor much elongated, *C. spicata* is distinguished by its long pointed pseudorostrum.

DISTRIBUTION. A single specimen collected from the edge of the slope off the Canary Isles in 1934 m depth.

***Cumella polita* sp. nov.**

(Fig. 25)

MATERIAL. All12-64: 1 ad. ♂, 1 imm. ♂, 4 ad. ♀♀. Ch50-76: 1 imm. ♂, 3 ad. ♀♀. Ch58-103: 1 ad. ♀. All24-126: 1 ad. ♀. All30-131: 1 imm. ♂, 1 ad. ♀, 1 imm. ♀.

DESCRIPTION. Adult female, length 4.0 mm: carapace (Fig. 25a, b) fairly well calcified with a shining appearance, less than twice as long as deep; the dorsal crest has four longish spines at the front followed by about 16 smaller spines. Pseudorostrum short and truncate, not upturned, and siphons very short. The eyelobe is oval but not elongated. Antennal notch distinctly excavated. The anterior pereon somites are raised dorsally but unarmed and the pleon is not very long. Pleonite 6 is rounded behind and hardly produced.

Antenna 1 (Fig. 25b) is fairly short with its basal segment only about as long as the second which has a dorsal projection distally. Maxilliped 3 (Fig. 25c) with basis a little longer than the remaining segments together, with a row of spines near its distal lower edge and the upper side produced distally; the merus is broadened and has a strong spine on its upper edge and another on the outer side; there are two spines on the upper edge of the carpus. Pereopod 1 (Fig. 25d) with basis about $\frac{3}{4}$ as long as rest of appendage; the carpus is a little longer than the propodus and twice as long as the dactyl. Pereopod 2 (Fig. 25e) has the basis also about $\frac{3}{4}$ as long remaining segments together; the dactyl is a little shorter than the carpus but twice as long as the propodus. Pereopod 5 is normally developed. Uropod (Fig. 25f) fairly long, its peduncle distinctly shorter than the last two pleonites together and less than twice as long as the rather broad endopod, which is much longer than the exopod.

Adult male similar to female but without dorsal spines.

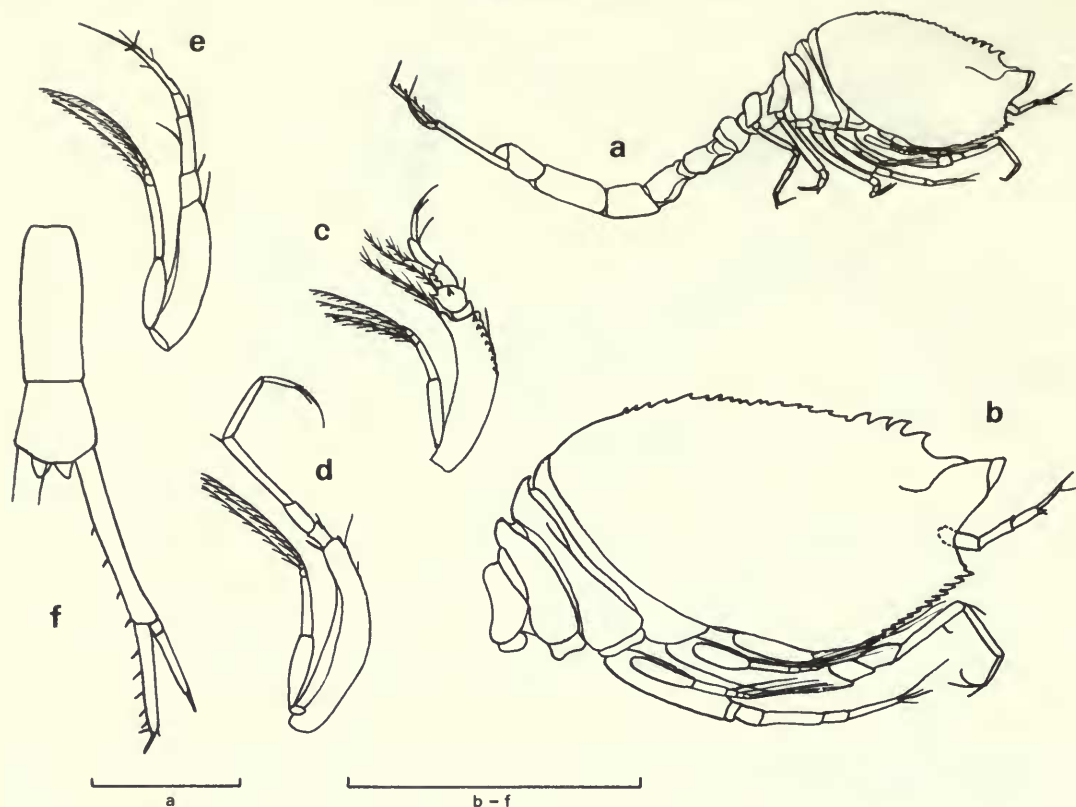


Fig. 25 *Cumella polita* ♀, (a) lateral view; (b) carapace and pereon from side; (c) maxilliped 3; (d) pereopod 1; (e) pereopod 2; (f) uropod and end of pleon.

TYPE LOCALITY. 38° 46' N, 70° 06' W, 2886 m. Type specimens deposited in the British Museum (Natural History). Holotype 1982:317:1, allotype 1982:318:1, paratypes 1982:319:2.

REMARKS. In *C. polita* the pseudorostrum is not at all upturned and the siphon is short; eyelobe is oval but not elongated, while in the female there are several large spines followed by about 16 smaller spines mid-dorsally on the carapace. The exopod peduncles are unserrated.

DISTRIBUTION. Recorded from the abyssal plain between Woods Hole and Bermuda between 2022 and 3806 m depth.

***Cumella meridionalis* sp. nov.**

(Fig. 26)

MATERIAL. All42-198: 1 imm. ♂, 1 imm. ♀. All60-237: 1 juv. 239: 9 ad. ♂♂, 31 imm. ♂♂, 107 ad. ♀♀, 79 imm. ♀♀. 240: 8 ad. ♂♂, 3 imm. ♂♂, 47 ad. ♀♀, 27 imm. ♀♀, 8 juv. 243: 2 ad. ♀♀, 2 juv. 245: 1 imm. ♂, 6 ad. ♀♀, 2 juv. 246: 1 ad. ♂, 5 imm. ♂♂, 13 ad. ♀♀, 1 juv. 259: 6 imm. ♂♂, 23 ad. ♀♀, 5 imm. ♀♀. 262: 3 imm. ♂♂, 6 imm. ♀♀. 264: 5 ad. ♀♀, 5 juv. Kn25-299: 5 imm. ♂♂. 301: 16 imm. ♂♂, 7 ad. ♀♀, 3 juv. Ch106-328: 1 imm. ♀. 334: 1 juv.

DESCRIPTION. Ovigerous female, length 3.5 mm: carapace (Fig. 26a) nearly twice as long as high with usually five or fewer but up to 12 forward-pointing mid-dorsal spines and some short setae. The spines may be regularly spaced or occurring in groups. There is a low protuberance on either side of the frontal area. Pseudorostrum short, nearly horizontal,

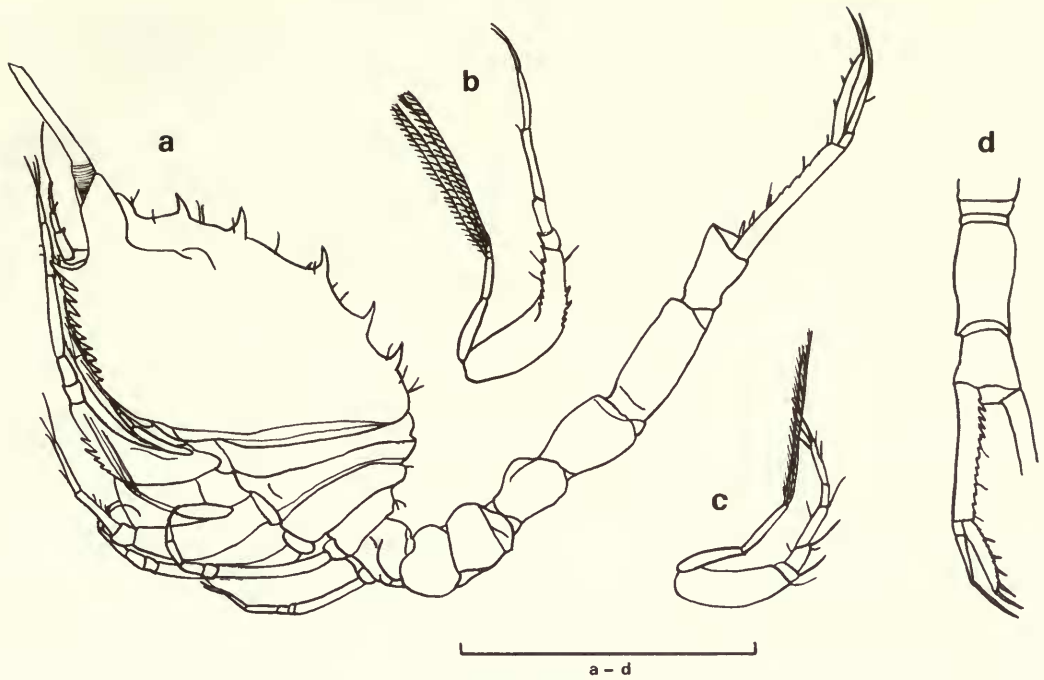


Fig. 26 *Cumella meridionalis* ovigerous ♀, (a) lateral view; (b) pereopod 1; (c) pereopod 2; (d) uropod and end of pleon.

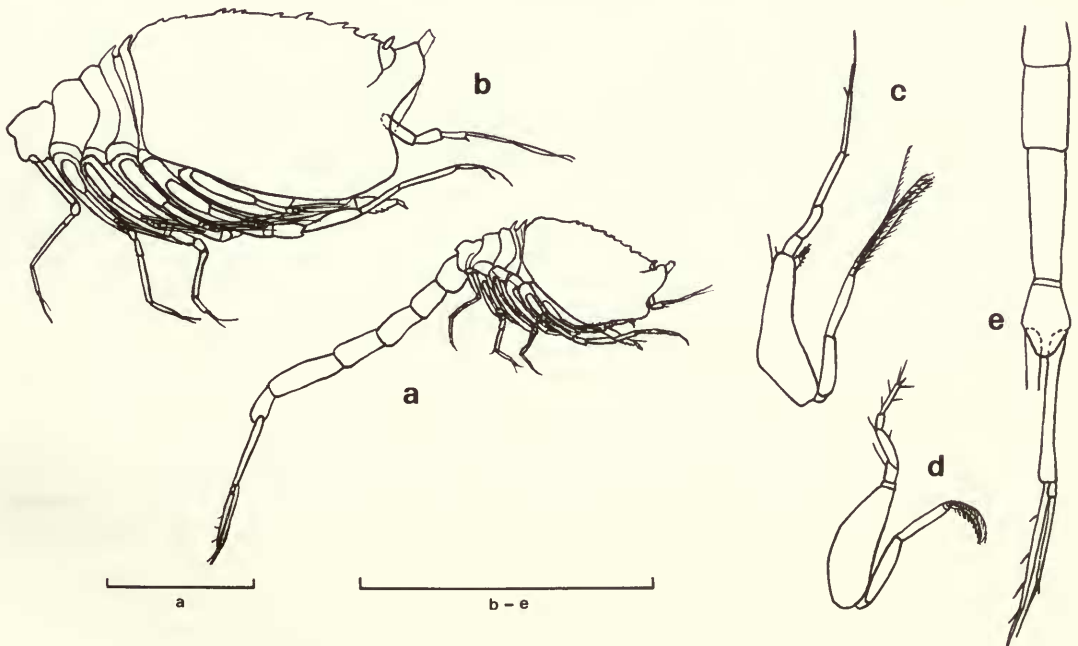


Fig. 27 *Cumella compacta* immature ♂, (a) lateral view; (b) carapace and pereon from side; (c) pereopod 1; (d) pereopod 2; (e) uropod and end of pleon.

siphons moderately long. Eyelobe not elongated. Antennal notch excavated and antero-lateral angle marked by a strong spine with a series behind it. Pereon and pleon somites are unarmed and the pleon is not much elongated, with pleonite 6 scarcely produced backwards.

Antenna 1 fairly short and stout with basal segment little longer than second. Pereopod 1 (Fig. 26b) with the basis strongly curved and with teeth on its upper and lower distal edges, about $\frac{3}{4}$ length of distal segments together; carpus somewhat longer than propodus, which is twice as long as dactyl. Pereopod 2 (Fig. 26c) with basis unarmed, about $\frac{3}{4}$ length of rest of appendage; carpus and dactyl about equal in length and each twice as long as propodus. Some adult females have reduced but not very rudimentary exopods on pereopods 3 and 4. Uropods (Fig. 26d) with peduncle fairly stout, much shorter than pleonites 5 and 6 together and almost twice as long as the fairly broad endopod, which is distinctly longer than the exopod; peduncle and endopod are both strongly serrated on their inner edges.

TYPE LOCALITY. 36° 49' S, 53° 15.4' W, 1661–1679 m. Type specimens deposited in the British Museum (Natural History). Holotype 1982 : 320 : 1, allotype 1982 : 321 : 1, paratypes 1982 : 322 : 12.

REMARKS. *C. meridionalis* has the pseudorostrum quite short and little upturned with the eyelobe not elongated and there are usually 5 but not more than 12 fairly large mid-dorsal spines on the carapace of the female and a low protuberance on either side of the frontal area. The uropod peduncles are strongly serrated on the inner edge.

DISTRIBUTION. Found from the mid-slope down to abyssal depths, from 993–4566 m from the NE. Atlantic and off Surinam, and from SW. Africa and Argentina in the South Atlantic.

***Cumella compacta* sp. nov.**
(Fig. 27)

MATERIAL. AII31-162: 1 imm. ♂.

DESCRIPTION. Immature male, length 3.2 mm: carapace (Fig. 27a, b) about $1\frac{1}{2}$ as long as deep with about 12 irregular broad mid-dorsal teeth. Pseudorostrum slightly upturned, short and truncate and siphons very short. Eyelobe fairly broad, not elongate, with one spine. Antero-lateral corner rounded and produced forwards, without teeth. Pereon and pleon unarmed, pleon fairly long, 6th pleonite fairly well produced behind.

Antenna 1 (Fig. 27b) of moderate length, basal segment distinctly longer than second which is fairly broad. Pereopod 1 (Fig. 27c) with basis about $\frac{3}{4}$ length of rest of appendage; carpus and propodus about equal in length and each twice as long as dactyl. Pereopod 2 (Fig. 27d) with basis slightly longer than rest of appendage; dactyl slightly shorter than carpus but twice as long as propodus. Pereopod 5 normally developed. Uropod (Fig. 27e) fairly long, peduncle not much longer than pleonite 5 or the endopod, which is narrow and much longer than the exopod.

TYPE MATERIAL. 08° 02' S-07° 56' S, 34° 03' W-34° 09' W, 1493 m. The holotype deposited in the British Museum (Natural History). 1982 : 323 : 1.

REMARKS. In *C. compacta* the pseudorostrum is short and scarcely upturned; the eyelobe is fairly broad, not elongated, with a single spine projecting from it and the carapace has a row of about 12 irregularly placed mid-dorsal spines; the antero-lateral angle is rounded and without spines or serrations. The uropods are slender with their peduncles unserrated.

DISTRIBUTION. A single specimen recorded from off Recife in 1493 m.

***Cumella decipiens* sp. nov.**
(Fig. 28)

MATERIAL. SMBA-ES20: 2 imm. ♀♀. BIOGAS IV-DS52: 2 imm. ♀♀. BIOGAS VI-DS87: 1 ad. ♀.

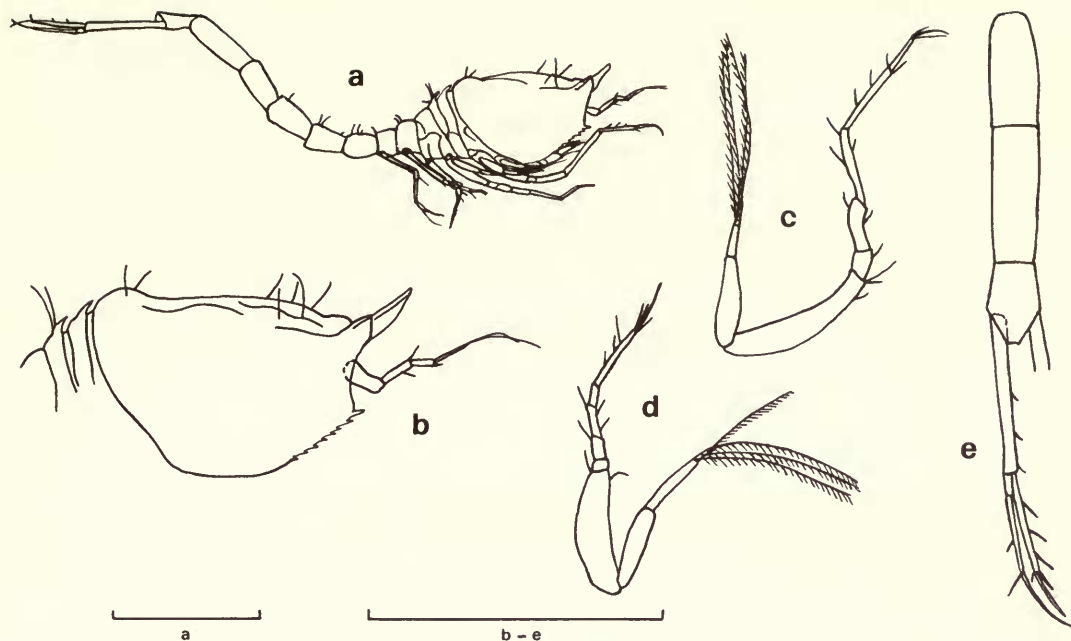


Fig. 28 *Cumella decipiens* ♀, (a) lateral view; (b) carapace from side; (c) pereopod 1; (d) pereopod 2; (e) uropod and end of pleon.

CP23: 4 ad. ♀♀. All30-131: 2 ad. ♀♀. All60-259: 2 ad. ♂♂, 8 ad. ♀♀, 7 imm. ♀♀. Kn25-293: 1 ad. ♂, 3 ad. ♀♀. 295: 8 imm. ♂♂, 4 ad. ♀♀, 2 juv. 297: 3 ad. ♀♀. 299: 1 ad. ♂, 6 imm. ♂♂, 4 ad. ♀♀.

DESCRIPTION. Adult female, length 3.3 mm: carapace (Fig. 28a, b) very similar in shape to that of *C. bishopi* but dorsal crest not usually apparent. There may be a few spines mid-dorsally but these are often broken off. The pseudorostrum is somewhat less truncate and the eyelobe is rounded and not elongated. The first two pereonites are raised dorsally. The pleon is unarmed except for scattered hairs and fairly long. The 6th pleon somite is well produced backwards and truncated.

Antenna 1 (Fig. 28b) not very long, with basal segment not much longer than second. Pereopod 1 (Fig. 28c) with basis more than half as long as rest of appendage; the carpus and propodus are about equal in length and each nearly twice as long as the dactyl. Pereopod 2 (Fig. 28d) with basis not much shorter than rest of appendage; the dactyl more than twice as long as the carpus and three times as long as the propodus. Pereopod 5 normally developed. Uropod (Fig. 28e) fairly long, its peduncle unarmed, much shorter than pleonites 5 and 6 together and about $1\frac{1}{2}$ as long as the endopod, which is very little longer than the exopod.

In the adult male the antero-lateral edges of the carapace are well produced forwards and rounded, with hyaline serrations, and the first antennal flagellum is long.

TYPE LOCALITY. 37° 13.3' S, 52° 45' W, 3305-3317 m. Type specimens deposited in the British Museum (Natural History). Holotype 1982 : 324 : 1, allotype 1982 : 325 : 1, paratypes 1982 : 326 : 4.

REMARKS. *C. decipiens* has the pseudorostrum short with a fairly short siphon and not much upturned; the eyelobe is rounded and not elongated and without a spine; the carapace has only a few mid-dorsal spines and these may be lacking; the antero-lateral angle has a fairly prominent spine in the female and a row of serrations behind.

DISTRIBUTION. Collected from the NW. and NE. Atlantic and Biscay and from off the Argentine and Surinam from mid-slope downwards in 500-3317 m depth.

Key to the Atlantic deep sea species of *Cumella*

- 1 Eyelobe doubled (Figs 7–10) 2
- Eyelobe single, rounded or elongate (Figs 4–6, 11–28) 5
- 2 Pseudorostral lobes and siphons widely separated; pleon long (Fig. 7)
 - vemae* (Bacescu, 1972)
- Pseudorostral lobes and siphons not widely separated (Figs 8–10) 3
- 3 Carapace with an irregularly double row of spines mid-dorsally (Fig. 9)
 - spinosa* sp. nov. (p. 218)
- Carapace without mid-dorsal spines (Figs 8, 10) 4
- 4 Pseudorostrum with some prominent forward-pointing spines below siphons (Fig. 10)
 - spinoculata* sp. nov. (p. 219)
- Pseudorostrum without forward-pointing spines (Fig. 8)
 - divisa* sp. nov. (p. 215)
- 5 Pseudorostrum upturned at an angle of 40° or more with the carapace (Figs 4–6, 12–20) 6
- Pseudorostrum set at an angle of 35° or less with the carapace (Figs 11, 21–28) 17
- 6 Pseudorostrum long, 1/3 of total carapace length and armed with long spines (Figs 12–13) 7
- Pseudorostrum less than 1/3 of total carapace length and unarmed (Figs 4–6, 14–20) 8
- 7 Sides of carapace unarmed; eyelobe short and rounded (Fig. 12)
 - aculeata* sp. nov. (p. 221)
- Carapace with spines all over; eyelobe narrow and as long as pseudorostrum (Fig. 13)
 - echinata* sp. nov. (p. 223)
- 8 Pseudorostrum short, not more than 1/8 of total carapace length; eyelobe not elongate (Figs 14–17) 9
- Pseudorostrum fairly long, at least 1/6 of total carapace length; eyelobe long and narrow (Figs 4–6, 18–20) 12
- 9 Carapace serrated dorsally but without spines (Figs 14, 15) 10
- Carapace with mid-dorsal spines (Figs 16, 17) 11
- 10 Eyelobe rounded and serrated; posterior pereonites with a transverse row of spines (Fig. 14).
 - concinna* sp. nov. (p. 224)
- Eyelobe narrowed and smooth; pereonites without spines rows (Fig. 15)
 - exstans* sp. nov. (p. 225)
- 11 A single row of about 8 mid-dorsal spines on carapace; eyelobe narrowed (Fig. 16)
 - dayae* sp. nov. (p. 226)
- Two rows set close together of numerous spines mid-dorsally on carapace; eyelobe broad at base (Fig. 17)
 - subducta* sp. nov. (p. 227)
- 12 Carapace without spines or serrations, eyelobe much shorter than pseudorostrum (Fig. 18)
 - angustata* sp. nov. (p. 228)
- Carapace with at least one row of mid-dorsal spines (Figs 4–6, 19, 20) 13
- 13 Pleon unarmed (Fig. 4)
 - gracillima* Calman, 1905
- Pleon with longitudinal spine rows or serrations (Figs 5, 6, 19, 20) 14
- 14 Spines in a single row mid-dorsally on carapace (Figs 5, 19) 15
- Spines set in two rows mid-dorsally at least on the hind part of the carapace (Figs 6, 20) 16
- 15 About 5 mid-dorsal spines on the carapace; bases of posterior pereopods and uropods unarmed (Fig. 19).
 - erecta* sp. nov. (p. 229)
- 15 or more mid-dorsal spines on carapace, bases of posterior pereopods and uropods with spine rows (Fig. 5)
 - egregia* Hansen, 1920
- 16 Some spines on sides of carapace and transverse spine rows on pereonites; first antenna long (Fig. 6)
 - antipai* (Bacescu & Muradian, 1974)
- Sides of carapace unarmed and pereonites without transverse rows of spines, first antenna much shorter (Fig. 20)
 - formosa* sp. nov. (p. 231)
- 17 Eyelobe narrowed, as long as pseudorostrum (Figs 11, 21–23) 18
- Eyelobe rounded or not much elongated, distinctly shorter than the pseudorostrum (Figs 24–28) 21
- 18 About 5 or fewer spines mid-dorsally on the carapace (Fig. 11)
 - acuminata* sp. nov. (p. 220)
- More than 10 spines mid-dorsally on carapace (Figs 21–23) 19
- 19 Two distinct rows of many hook-shaped spines mid-dorsally on the carapace; there are spines on the carapace border above as well as below the antero-lateral angle (Fig. 21)
 - bishopi* sp. nov. (p. 233)
- Spines mid-dorsally on the carapace fewer and irregularly doubled; no spines on carapace border above antero-lateral angle (Figs 22, 23) 20

- 20 Carapace elongate, about twice as long as deep; pseudorostrum truncate, not projecting forward much beyond front of carapace (Fig. 22) *cristata* sp. nov. (p. 234)
- Carapace much less than twice as long as deep; pseudorostrum pointed, projecting forward well beyond front edge of carapace (Fig. 23) *longisipho* sp. nov. (p. 235)
- 21 Pseudorostrum long and pointed, almost 1/3 of total carapace length (Fig. 24) *spicata* sp. nov. (p. 235)
- Pseudorostrum shorter, not more than 1/6 of total carapace length (Figs 25–28) . 22
- 22 Carapace with more than 12 mid-dorsal spines or serrations (Fig. 25) *polita* sp. nov. (p. 237)
- Carapace with not more than 12 mid-dorsal spines (Figs 26–28) . 23
- 23 Carapace with mid-dorsal spines prominent; pleon and uropods comparatively stout (Fig. 26) *meridionalis* sp. nov. (p. 238)
- Carapace with mid-dorsal spines not prominent; pleon and uropods comparatively slender (Figs 27, 28) 24
- 24 Carapace slightly arched dorsally and with a row of about 12 irregular spines; peduncle of uropod $1\frac{1}{4}$ as long as endopod (Fig. 27) *compacta* sp. nov. (p. 240)
- Carapace with few or no spines dorsally but raised at hind end; peduncle of uropod $1\frac{1}{2}$ as long as endopod (Fig. 28) *decipiens* sp. nov. (p. 240)

Genus *ATLANTOCUMA* Bacescu and Muradian, 1974

General appearance similar to *Iphinoe*, with 5 free pereonites, the first almost fused to the carapace. Mandible boat-shaped. Telson not separated. No pleopods in either sex. Uropodal endopod one-segmented. Only the first pair of pereopods with exopods in the female, pereopods 1–4 in the male. Maxilliped 1 without the branchial elements. Maxilliped 3 with long basis not distally widened.

Bacescu and Muradian were uncertain about the systematic position of the genus, stressing its bodotriid characters apart from the lack of pleopods. The lack of a free telson and of pleopods seem to place it in the Nannastacidae and perhaps it is best left there to avoid confusion between family diagnoses. However, from its general appearance and the shape of the mouthparts it is most likely an aberrant member of the Bodotriidae.

Atlantocuma benguelae Bacescu and Muradian, 1974

MATERIAL. AII60-247: 1 ad. ♂, 42 imm. ♂♂, 49 ad. ♀♀, 25 imm. ♀♀.

DISTRIBUTION. The first record of this species was from 4893 m depth south of Cape Town. It is now recorded from 5223 m off the Argentine coast. In the adult male the pseudorostrum is abruptly truncate.

Atlantocuma tenuis sp. nov (Fig. 29)

MATERIAL. MBAUK-50: 1 ad. ♀, 1 imm. ♀. 65: 1 imm. ♀, 2 juv. IOS-7709 # 72: 1 imm. ♀. 7709 # 73: 4 ad. ♀♀, 2 juv. SMBA-ES4: 1 imm. ♂, 3 ad. ♀♀. ES10: 8 imm. ♂♂, 14 ad. ♀♀, 34 imm. ♀♀, 8 juv. ES12: 4 ad. ♂♂, 14 imm. ♂♂, 14 ad. ♀♀, 19 imm. ♀♀, 7 juv. BIOGAS I-DS13: 1 imm. ♀, 1 juv. POLYGAS-DS15: 39 imm. ♀♀. DS18: 75 imm. ♀♀. BIOGAS II-DS31: 1 imm. ♀. BIOGAS III-DS50: 2 ad. ♀♀. BIOGAS IV-DS51: 3 ad. ♀♀. DS52: 1 ad. ♀, 1 imm. ♀. BIOGAS V-DS66: 2 imm. ♂♂, 3 ad. ♀♀, 6 imm. ♀♀. BIOGAS VI-DS79: 4 ad. ♂♂, 5 imm. ♂♂, 3 ad. ♀♀, 3 imm. ♀♀, 2 juv. DS86: 40 imm. ♀♀. DS87: 7 imm. ♀♀. CP09: 7 ad. ♀♀. CP23: 1 imm. ♀, 1 juv. *Atlantis* 264-G₁ # 1: 1 imm. ♂. AII12-66: 1 imm. ♂, 1 ad. ♀, 1 imm. ♀. 70: 6 ad. ♀♀. Ch50-76: 1 ad. ♀. 83: 1 juv. 84: 1 imm. ♂, 5 ad. ♀♀. 85: 3 imm. ♂♂, 11 ad. ♀♀, 6 imm. ♀♀. AII17-92: 1 ad. ♀. 93: 1 ad. ♀. Ch58-103: 1 imm. ♂, 1 ad. ♀. AII24-125: 2 imm. ♂♂, 4 ad. ♀♀, 1 imm. ♀, 1 juv. 126: 1 ad. ♂, 3 imm. ♂♂, 5 ad. ♀♀. AII30-131: 2 ad. ♂♂, 16 imm. ♂♂, 23 ad. ♀♀, 19 imm. ♀♀, 5 juv. AII31-155: 2 imm. ♂♂, 1 ad. ♀, 2 imm. ♀♀, 2 juv. 156: 1 ad. ♂, 4 imm. ♂♂, 6 ad. ♀♀. 162: 2 ad. ♀♀. 169: 2 ad. ♀♀. AII40-175: 1 imm. ♀, 1 juv. AII42-198: 1 ad. ♀. 201: 2 imm. ♂♂, 1 ad. ♀. 9 imm. ♀♀. AII60-239: 3 ad. ♂♂, 6 imm. ♂♂, 312 ad. ♀♀, 212 imm. ♀♀. 242: 1 juv. 245: 13 ad. ♂♂, 33 imm. ♂♂, 174 ad. ♀♀, 126 imm. ♀♀. Kn25-287: 3 imm. ♀♀. 191: 1 imm. ♀. 293: 1 imm. ♂, 13 ad. ♀♀, 6 juv. 295: 2 juv. 297: 4 imm. ♀♀. 299: ad. ♂, 1 imm. ♂, 12

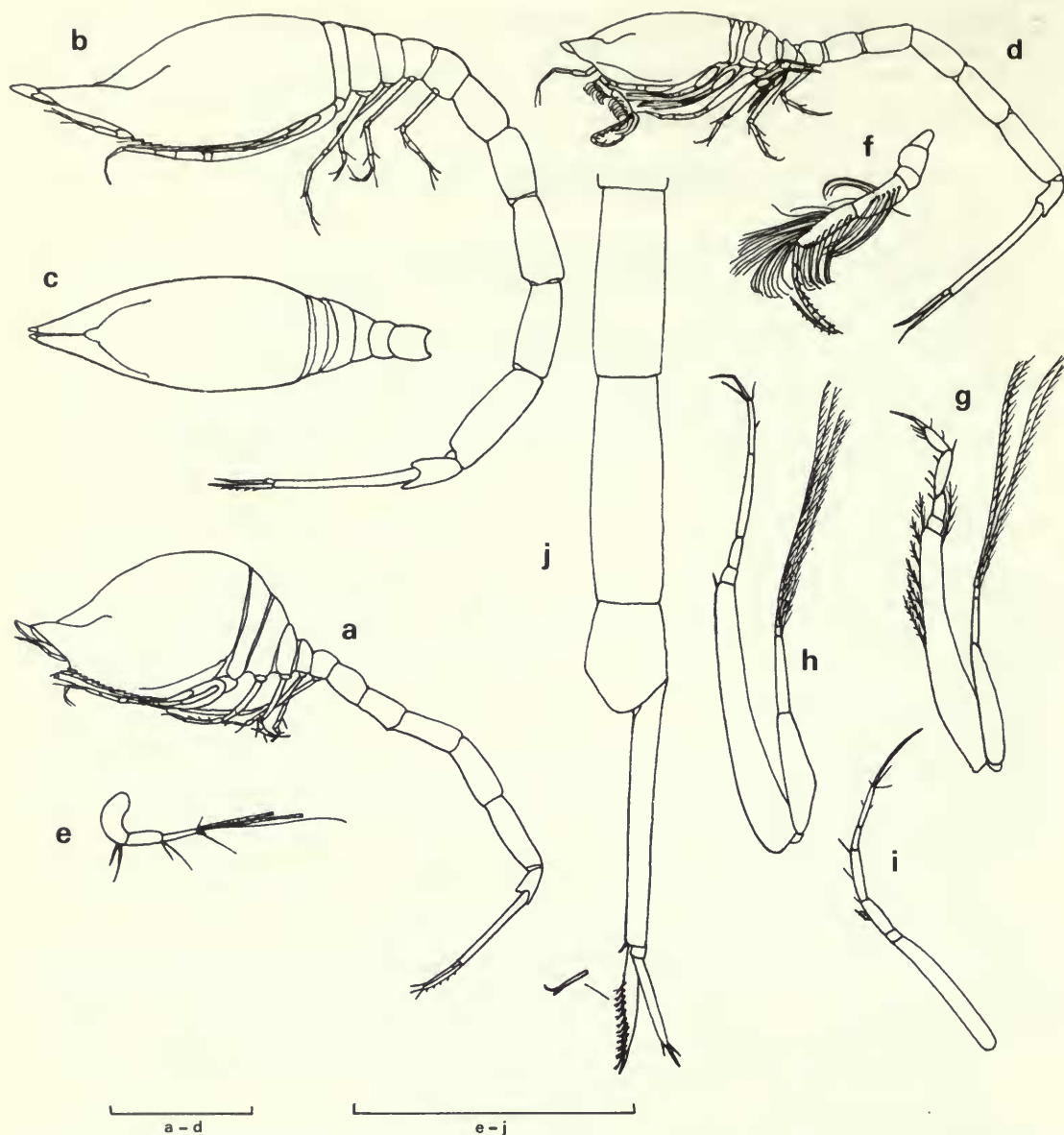


Fig. 29 *Atlantocuma tenuis*, (a) ovigerous ♀ from side; (b) adult ♀ from side; (c) carapace and pereon of adult ♀ from above; (d) adult ♂ from side; (e) ♀ antenna 1; (f) ♂ antenna 2; (g) ♀ maxilliped 3; (h) pereopod 1; (i) pereopod 2; (j) uropod and end of pleon.

ad. ♀♀, 15 imm. ♀♀. 301: 5 ad. ♂♂, 10 imm. ♂♂, 6 ad. ♀♀, 24 imm. ♀♀. 303: 3 ad. ♀♀, 1 juv. Ch106-318: 1 imm. ♂, 2 imm. ♀♀, 1 juv. 334: 30 ad. ♂♂, 7 imm. ♂♂, 45 ad. ♀♀, 4 imm. ♀♀. Kn35-340: 79 ad. ♂♂, 4 imm. ♀♀, 61 ad. ♀♀, 3 imm. ♀♀.

DESCRIPTION. Ovigerous female, length 4.6 mm: carapace (Fig. 29a) smooth, strongly arched dorsally, about $1\frac{1}{2}$ as long as high, laterally compressed; pseudorostrum not very long, pointed, siphons short; antero-lateral angle not prominent, marked by a blunt spine, with a row of serrations on the lower margin behind; eyelobe fairly large, pointed at front, without lenses. Pereon somites smooth, all distinct, the first two deep, not differing much in length. Pleon long and slender without spines or serrations.

Antenna 1 (Fig. 29e) of moderate length, its basal segment strongly curved, much shorter than the subequal second and third segments together; the main flagellum has two aesthetascs. Maxilliped 3 (Fig. 29g) with basis very long, about three times as long as remaining segments together; carpus about as long as ischium and merus together and distinctly longer than propodus; dactyl short and narrow with a terminal claw. Pereopod 1 (Fig. 29h) very slender with basis distinctly longer than remaining segments together, carpus about twice as long as ischium and merus together and much longer than the propodus, which is about twice as long as the narrow dactyl. Pereopod 2 (Fig. 29i) longer than pereopods 3–5, with basis shorter than remaining segments together; carpus about as long as ischium and merus together, more than twice as long as the propodus and a little longer than the dactyl. Only the first pereopods have an exopod. Uropods (Fig. 29j) with basis distinctly longer than pleonite 5 and nearly three times as long as the endopod, which is one-segmented with a distal row of 12–13 compound spines and a little longer than the two-segmented exopod.

Adult female, length 6.6 mm: similar otherwise to ovigerous female, but carapace (Fig. 29b, c) proportionately longer and less deep, nearly $2\frac{1}{2}$ as long as high; the pseudorostrum is proportionately longer and there are fewer serrations on the infero-lateral borders; there is less difference in height between the first two and the last three pereonites.

Adult male, length 4.2 mm: carapace (Fig. 29d) less arched than in ovigerous female and infero-lateral borders without serrations. Antenna 2 (Fig. 29f) with brushes of long fine setae on last two segments of peduncle; flagellum short, not reaching as far back as rear of carapace, about 11-segmented. Exopods are present on pereopods 1–4. The uropod peduncles are proportionately longer than in the female.

The difference in carapace shape described above between smaller ovigerous and larger non-ovigerous females seems to be consistent and it therefore appears possible that the larger females acquire their more elongated carapace at a moult subsequent to brood release.

TYPE LOCALITY. 36° 49' S, 35° 15.4' W, 1661–1679 m. Type material deposited in the British Museum (Natural History). Holotype 1982 : 327 : 1, allotype 1982 : 328 : 1, paratypes 1982 : 329 : 30.

REMARKS. *A. tenuis* is generally similar to the type species but has a less truncate and more pointed pseudorostrum in either sex.

DISTRIBUTION. Widespread in the North and South Atlantic both horizontally and vertically between 587 and 5000 m depth.

Genus *CUMELLOPSIS* Calman, 1905

Carapace ovoid, without mid-dorsal spines. Eyelobe rudimentary, without eyes. Mandibles normal. Maxilliped 2 with 7 segments.

Although *Cumellopsis* has a rather distinct facies which is different from that of any species of *Cumella*, it is at present impossible to give a satisfactory diagnosis of the genus which will separate it from the latter. It is not known if the number of segments in the second maxilliped is always less than 7 in *Cumella*. Bacescu and Muradian (1977) provide a key to the genera of the Nannastacidae in which *Cumellopsis* and *Platycuma* are separated from *Cumella* by a shorter second antennal flagellum in the adult male. However, while this holds good for *Platycuma*, in some of the species of *Cumellopsis* at least, the second antennal flagellum of fully adult males reaches back beyond the carapace, in *C. helgae* to the hind end of the pleon.

Cumellopsis helgae Calman, 1905

MATERIAL. MBAUK-56: 1 ad. ♂, 63: 1 imm. ♂, 4 imm. ♀♀, 66: 1 ad. ♀. SMBA-ES4: 3 ad. ♂♂, 7 imm. ♂♂, 21 imm. ♀♀. ES10: 1 imm. ♂. ES12: 3 imm. ♂♂, 3 ad. ♀♀, 3 imm. ♀♀. ES18: 1 ad. ♀. ES20: 1 imm. ♂, 1 juv. ES22: 1 imm. ♂, 1 imm. ♀. ES58: 1 imm. ♂. SBC67: 1 imm. ♀. ES137: 1 imm. ♀. ES147: 1 imm. ♂, 1 ad. ♀, 1 imm. ♀. *Thalassa* 73-Z421: 1 ad. ♀. Z435: 1 ad. ♂. Z441: 1 imm. ♀, 2 juv. POLY-GAS-DS15: 1 ad. ♂, 7 ad. ♀♀, 1 imm. ♀. DS16: 1 imm. ♀. DS18: 3 ad. ♂♂, 4 ad. ♀♀, 4 imm. ♀♀. DS26:

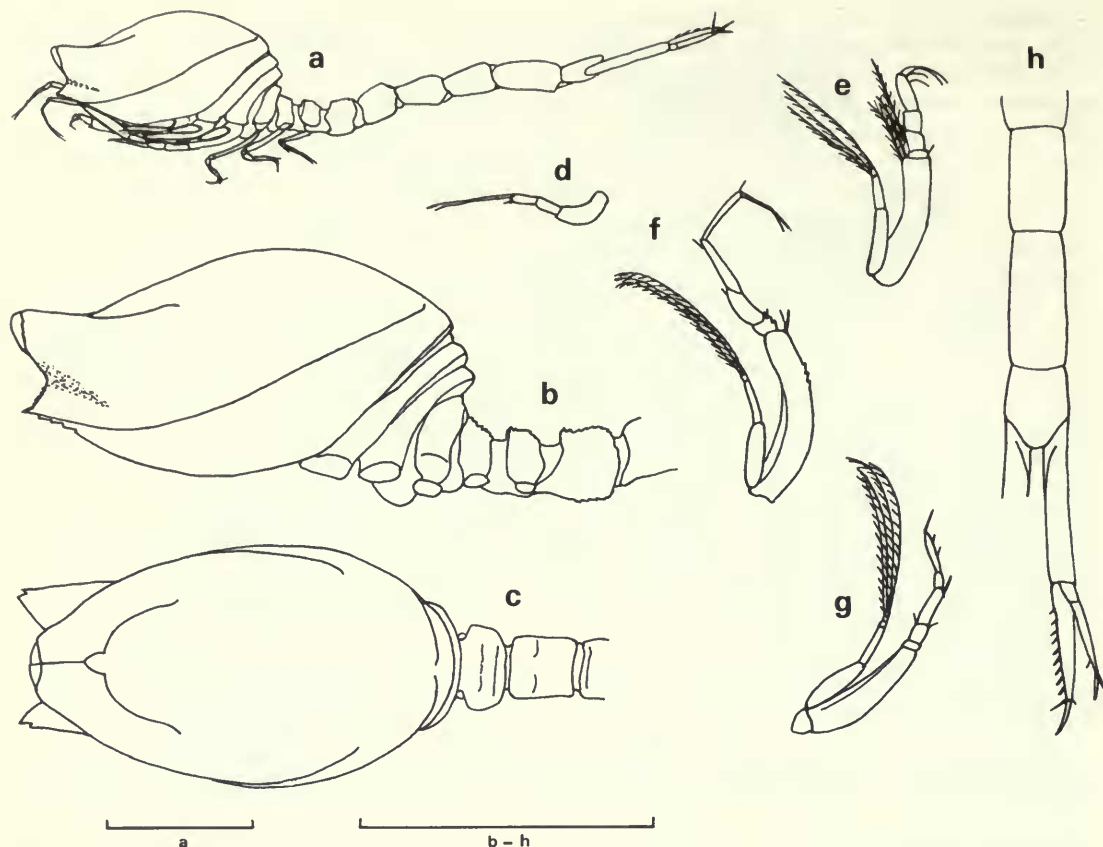


Fig. 30 *Cumellopsis puritani* ♀, (a) lateral view; (b) carapace and pereon from side; (c) carapace and pereon from above; (d) antenna 1; (e) maxilliped 3; (f) pereopod 1; (g) pereopod 2; (h) uropod and end of pleon.

1 imm. ♂. BIOGAS II-DS30: 1 imm. ♂. DS31: 2 imm. ♂♂, 4 ad. ♀♀. DS33: 5 imm. ♂♂, 10 imm. ♀♀, 2 juv. DS34: 1 imm. ♀. BIOGAS III-DS35: 1 ad. ♂, 1 juv. DS41: 1 imm. ♂, 4 ad. ♀♀, 1 imm. ♀. DS49: 1 imm. ♂. BIOGAS IV-DS51: 2 ad. ♀♀. DS52: 1 imm. ♂, 4 ad. ♀♀. DS62: 1 imm. ♀. BIOGAS VI-DS86: 5 imm. ♂♂, 2 ad. ♀♀, 5 imm. ♀♀, 1 juv. DS87: 1 imm. ♂, 2 imm. ♀♀, 3 juv. CP23: 3 imm. ♂♂, 2 imm. ♀♀. CP25: 9 ad. ♀♀, 6 juv. *Atlantis* 283-Slope # 4: 1 imm. ♀. Ch50-87: 5 ad. ♂♂, 10 imm. ♂♂, 112 ad. ♀♀, 120 imm. ♀♀. Ch58-96: 29 imm. ♂♂, 24 ad. ♀♀, 37 imm. ♀♀, 1 juv. 105: 3 imm. ♂♂, 3 ad. ♀♀, 3 imm. ♀♀. Ch88-207: 26 imm. ♂♂, 15 ad. ♀♀, 30 imm. ♀♀, 7 juv. Ch106-321: 1 ad. ♂, 3 imm. ♂♂, 2 ad. ♀♀, 2 imm. ♀♀. Kn35-346: 29 imm. ♂♂, 19 ad. ♀♀, 21 imm. ♀♀, 61 juv.

REMARKS. As noted above, the male second antennal flagellum is long and slender, reaching back beyond the hind end of the pleon and this seems to be a character separating it from *C. puritani*, in which the flagellum reaches only to the hind end of the pereon.

DISTRIBUTION. Previously recorded from 699 m west of Ireland and 208 to 924 m south and north-west of Iceland and the Faroes, the present records show it to be widespread on both sides of the northern North Atlantic between 400 and 4106 m depth.

***Cumellopsis puritani* Calman, 1906**
(Fig. 30)

MATERIAL. MBAUK-56: 1 ad. ♀. AII59-211: 2 ad. ♂♂, 4 imm. ♂♂, 14 ad ♀♀, 2 juv.

DISTRIBUTION. Recorded from the Mediterranean by Calman in 950–1100 m depth, and by

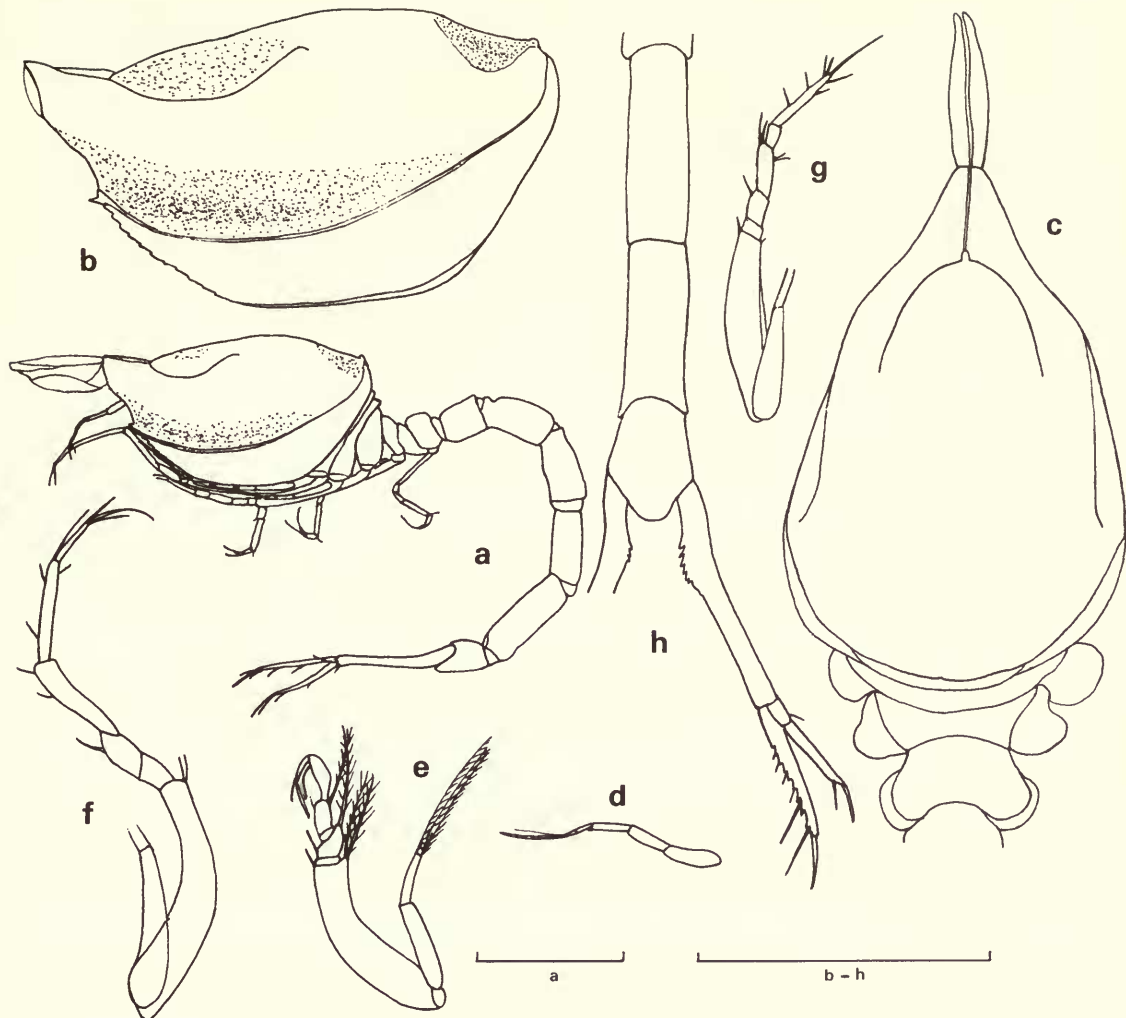


Fig. 31 *Cumellopsis bicostata* ♀, (a) lateral view; (b) carapace and pereon from side; (c) carapace and pereon from above; (d) antenna 1; (e) maxilliped 3; (f) pereopod 1; (g) pereopod 2; (h) uropod and end of pleon.

Reyss (1972, 1973) in 2110 m and 2090 m, it is again recorded from the Mediterranean in 509 m and from Biscay in 641 m.

Cumellopsis bicostata sp. nov.

(Fig. 31)

MATERIAL. IOS-7709 # 73: 1 imm. ♂, 1 imm. ♀. POLYGAS-DS21: 3 ad. ♂♂, 1 ad. ♀. DS22: 1 imm. ♂. All31-162: 1 ad. ♂, 1 ad. ♀. 167: 2 ad. ♂♂, 4 imm. ♂♂, 14 ad. ♀♀, 2 imm. ♀♀. All60-239: 4 ad. ♂♂, 22 imm. ♂♂, 106 ad. ♀♀, 52 imm. ♀♀. Kn25-239: 1 ad. ♂, 2 imm. ♂♂, 51 ad. ♀♀, 34 imm. ♀♀. 295: 2 imm. ♂♂, 8 ad. ♀♀. 297: 1 ad. ♀, 1 imm. ♀. 301: 2 ad. ♂♂, 2 imm. ♂♂, 3 imm. ♀♀. 303: 1 imm. ♂, 1 imm. ♀.

DESCRIPTION. Adult female, length 5.2 mm: carapace (Fig. 31a-c) well calcified, less than twice as long as deep and fairly broad, a little raised postero-dorsally, with well-defined ridge on either side running back from the antero-lateral angle to join its fellow dorsally near

the hind end; above the ridge on either side is a shallow depression; pseudorostrum fairly long with long siphons; the antero-lateral angle not prominent, defined by a strong tooth with a few serrations behind; eyelobe very small. Pereon and pleon somites without spines or serrations, the pleon slender.

Antenna 1 (Fig. 31d) fairly long with the three segments of the peduncle fairly narrow and decreasing in length distally only slightly. Maxilliped 3 (Fig. 31e) with basis much longer than remaining segments together, the merus broad with its distal upper end prolonged; the carpus and propodus about equal in length; the propodus broadened and nearly twice as long as the narrow dactyl. Pereopod 1 (Fig. 31f) unarmed, with its basis much shorter than remaining segments combined, its carpus about as long as the propodus and a little longer than the ischium and merus together; the dactyl is short and narrow. Pereopod 2 (Fig. 31g) with basis about as long as remaining segments together, its carpus about twice as long as the propodus and about $2/3$ the length of the dactyl, which is not very narrow. Uropod (Fig. 31h) with basis about $1\frac{1}{2}$ as long as pleonite 5, somewhat curved, with a bulge on its inner edge near the base bearing a few serrations; the endopod is about $3/5$ as long as the peduncle, with some serrations on its inner edge and some spines which are longer distally; the exopod is distinctly shorter than the endopod.

The adult male resembles the female in general aspect. The flagellum of antenna 2 is fairly short. The uropodal exopod is shorter in proportion to the endopod and the bend in its peduncle is less pronounced.

TYPE LOCALITY. $8^{\circ} 58' \text{ N}$, $54^{\circ} 04.3' \text{ W}$, 1456–1518 m. Type specimens deposited in the British Museum (Natural History). Holotype 1982 : 330 : 1, allotype 1982 : 331 : 1, paratypes 1982 : 332 : 20.

REMARKS. *Cumellopsis bicostata* differs from *C. helgae* and resembles *C. puritani* in the presence of a well defined and sharp ridge on either side of the carapace. In *C. puritani* the antero-lateral angle is much more pronounced, reaching nearly as far forward as the front of the pseudorostrum, the eyelobe is larger and the uropod peduncle is straighter, without inner serrations.

DISTRIBUTION. The species has been found to be fairly widespread between 500 and 4144 m from off the Argentine and Brazil coasts in the south-west and west tropical Atlantic and off Surinam and from west of Scotland and Biscay in the North Atlantic.

Cumellopsis laevis sp. nov.

(Fig. 32)

MATERIAL. IOS-6696: 2 imm. ♂♂, 3 ad. ♀♀, 2 imm. ♀♀. 6709: 4 imm. ♀♀. SBMA-ES129: 1 imm. ♂. BIOGAS V-DS66: 1 imm. ♂, 1 imm. ♀, 1 juv. DS67: 3 ad. ♀♀.

DESCRIPTION. Adult female, length 4.9 mm: carapace (Fig. 32a, b) well calcified, pearly white, without lateral ridges or furrows except just above the antero-lateral angle, nearly twice as long as high; pseudorostrum fairly long, somewhat truncated, with some crenulations in front; the eyelobe small; antero-lateral angle well defined by a strong spine with several others decreasing in size behind it. Pereon and pleon unarmed, the pleon slender.

Antenna 1 (Fig. 32c) slender, not very long, the basal segment nearly as long as the second and third together, the second nearly twice as long as the third. Maxilliped 3 (Fig. 32d) with basis curved, distinctly longer than remaining segments together, the propodus longer than the subequal carpus or dactyl. Pereopod 1 (Fig. 32e) with the basis distally narrow, distinctly shorter than remaining segments together, the carpus and propodus nearly equal in length and each much longer than the merus; the dactyl short. Pereopod 2 (Fig. 32f) with basis comparatively short and broad at the base, the carpus more than twice as long as the propodus and longer than the merus but a little shorter than the slender dactyl. Uropod (Fig. 32g) with peduncle slender, straight, less than $1\frac{1}{2}$ as long as pleonite 5, nearly twice as long

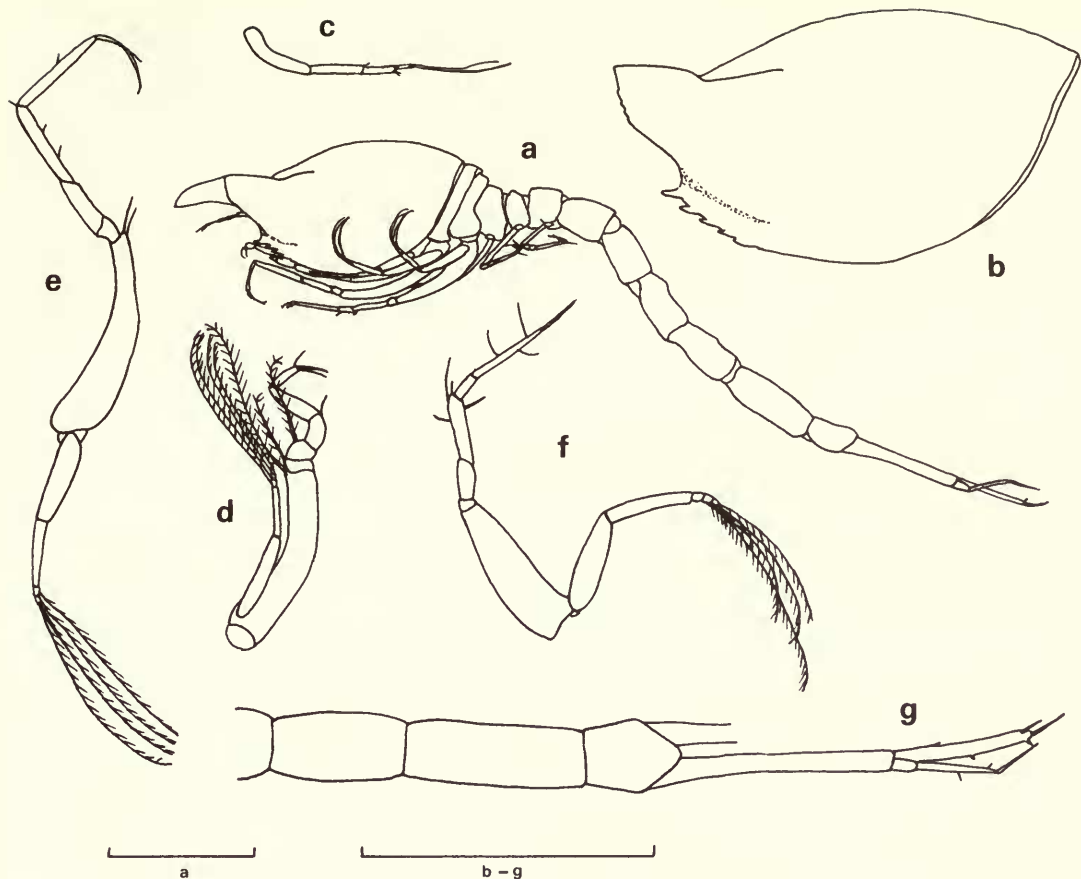


Fig. 32 *Cumellopsis laevis* ♀, (a) lateral view; (b) carapace from side; (c) antenna 1; (d) maxilliped 3; (e) pereopod 1; (f) pereopod 2; (g) uropod and end of pleon.

as the endopod, which has only a few short spines on its inner edge and is much longer than the narrower exopod.

Adult male unknown.

TYPE LOCALITY. 28° 06' N, 13° 28' W, 1780 m. Type specimens deposited in the British Museum (Natural History). Holotype 1982 : 333 : 1, paratypes 1982 : 334 : 3.

REMARKS. *Cumellopsis laevis* differs from the three other species of the genus found in these collections by the absence of lateral ridges or furrows on its carapace. It seems to be generally similar to *C. est-africana* (Bacescu and Muradian) but the latter is known only from the adult male.

DISTRIBUTION. Recorded from Biscay and the Canary Islands in depths between 1780 and 4150 m.

Genus *PLATYCUMA* Calman, 1905

Generally resembling *Cumellopsis* but sometimes more flattened dorso-ventrally and always with the forepart of the gut spirally coiled.

Platycuma holti Calman, 1905

MATERIAL. MBAUK-50: 6 ad. ♀♀, 9 imm. ♀♀. 66: 4 ad. ♂♂, 5 ad. ♀♀. IOS-7709 # 62: 5 ad. ♂♂, 2 ad.

♀♀, 1 juv. 7709 # 72: 2 imm. ♂♂, 3 ad. ♀♀, 7 juv. 7709 # 73: 3 ad. ♂♂, 1 imm. ♂, 12 ad. ♀♀. 7709 # 85: 3 ad. ♂♂, 6 ad. ♀♀, 1 imm. ♀. SMBA-ES4: 1 imm. ♀. ES12: 2 ad. ♂♂, 4 ad. ♀♀, 3 imm. ♀♀, 4 juv. BIOGAS I-DS14: 2 juv. POLYGAS-DS15: 2 imm. ♀♀. DS16: 2 ad. ♀♀, 1 juv. DS18: 1 juv. DS26: 1 imm. ♀. BIOGAS II-DS31: 19 imm. ♂♂, 6 ad. ♀♀, 14 imm. ♀♀, 125 juv. BIOGAS III-DS41: 3 ad. ♂♂, 6 imm. ♂♂, 10 ad. ♀♀, 24 imm. ♀♀. DS49: 1 ad. ♀. DS50: 1 imm. ♀. BIOGAS IV-DS51: 2 ad. ♂♂, 1 imm. ♂, 2 ad. ♀♀, 6 juv. BIOGAS V-DS66: 2 imm. ♂♂, 2 ad. ♀♀, 4 imm. ♀♀. BIOGAS VI-DS74: 3 imm. ♂♂, 1 ad. ♀, 4 imm. ♀♀, 1 juv. DS79: 1 juv. CP09: 1 imm. ♀. CP25: 1 imm. ♀. *Atlantis* 273-GH # 3: 1 imm. ♂. AII12-62: 1 ad. ♀. 64: 1 imm. ♂, 5 ad. ♀♀, 92 imm. ♀♀, 1 juv. 66: 1 ad. ♀, 5 imm. ♀♀. 70: 3 ad. ♂♂, 1 imm. ♂, 1 ad. ♀, 1 imm. ♀. 72: 1 imm. ♂, 5 ad. ♀♀, 2 imm. ♀♀. Ch50-76: 17 imm. ♂♂, 20 ad. ♀♀, 23 imm. ♀♀. 84: 2 imm. ♂♂, 1 imm. ♀. AII24-125: 1 ad. ♀, 1 imm. ♀. AII30-131: 1 imm. ♀. AII31-144: 1 imm. ♂, 1 ad. ♀, 1 imm. ♀. 155: 6 imm. ♂♂, 5 ad. ♀♀, 6 imm. ♀♀. 156: 1 ad. ♂, 11 imm. ♂♂, 8 ad. ♀♀, 9 imm. ♀♀, 8 juv. AII60-239: 1 ad. ♂, 7 ad. ♀♀, 2 imm. ♀♀. 240: 4 ad. ♂♂, 5 imm. ♂♂, 8 ad. ♀♀, 1 juv. 262: 3 imm. ♂♂, 2 imm. ♀♀, 1 juv. 264: 1 ad. ♀. Kn25-291: 1 ad. ♀. 293: 1 imm. ♀. 295: 1 imm. ♀. 299: 1 imm. ♂, 10 ad. ♀♀, 6 imm. ♀♀. 301: 1 ad. ♀, 14 juv. 303: 3 imm. ♀♀, 3 juv. Ch106-313: 14 juv. 321: 1 ad. ♂, 9 imm. ♂♂, 11 ad. ♀♀, 16 imm. ♀♀. 323: 3 imm. ♂♂, 4 ad. ♀♀, 5 imm. ♀♀, 1 juv. 328: 1 imm. ♀. 334: 7 imm. ♂♂, 1 ad. ♀, 3 imm. ♀♀, 5 juv. Kn35-340: 1 ad. ♂, 1 imm. ♂.

REMARKS. Zimmer (1943, 1980) described *Platycuma marginalis* from a single young male found in 2795 m off the north-east coast of the U.S.A. and suggested that Fage's two specimens from Biscay did not belong to *P. holti* but possibly to *P. marginalis*.

Although a considerable number of specimens is now available, I have not found it possible to confirm the existence of *P. marginalis*. In the collections from Ch106 Sta. 323 and BIOGAS III Sta. DS41, two forms may tentatively be distinguished among mature and subadult females differing as follows:

A

Pseudorostrum reaching about as far forward as antero-lateral angle.
Antero-lateral angle relatively acute, with distinct teeth.
Dorsal somite ridges relatively strongly toothed.
Uropod peduncle relatively slender.
Posterior margins of pleonite 6 almost straight.

B

Pseudorostrum not reaching as far forward as antero-lateral angle.
Antero-lateral angle relatively obtuse, teeth often indistinct.
Dorsal somite ridges relatively weakly toothed.
Uropod peduncle relatively stout.
Posterior margins of pleonite 6 forming an angle.

Specimens from Ch106 Sta. 321 all resemble form A. Mature and immature males show considerable variation but are not readily divisible into forms; however, the mature males are not easily recognizable as belonging to Calman's species. I do not consider Fage's male to differ sufficiently from Calman's to be regarded as separate. Contrary to his suggestion, it is more likely that Calman's type specimen was fully mature while Fage's male was in the previous moult stage. It is not completely true that, as stated by Zimmer (1980), young males still have entirely female characters. Apart from the different stages of development of second antennae and pereopodal exopods, the shape of the carapace and other characters may differ from that of females in males one or two moults before maturity and these stages can therefore not be compared in all respects with females. The two forms A and B do not correspond respectively to Fage's female or to the immature male described as *P. marginalis* by Zimmer.

I believe that only one species, *P. holti*, is present and that *P. marginalis* cannot be considered separate, although some doubts must still remain.

DISTRIBUTION. Recorded by Calman from west of Ireland in 688 m and Fage (1929) from Biscay in 4380 m, it is now found to be widespread on both sides of the North and tropical Atlantic and from off the Argentine coast, between 1000 and 4825 m.

Platycuma sandersi Jones, 1973

MATERIAL. IOS-6709: 2 imm. ♂♂, 1 imm. ♀, 2 juv. SMBA-ES10: 4 imm. ♀♀. POLYGAS-DS15: 1 imm. ♀. DS20: 1 ad. ♂, 5 ad. ♀♀, 4 juv. DS21: 6 ad. ♀♀. DS22: 1 ad. ♀. BIOGAS IV-DS51: 1 imm. ♂. DS55: 9 juv. BIOGAS V-DS66: 7 imm. ♂♂, 10 imm. ♀♀. DS67: 4 imm. ♂♂, 2 imm. ♀♀. Ch50-85: 34 ad. ♂♂, 36 ad. ♀♀, 2 imm. ♀♀. AII31-142: 1 imm. ♀. 144: 1 imm. ♀. 156: 1 imm. ♂, 1 ad. ♀. 167: 4 imm. ♂♂, 7 ad. ♀♀, 5 imm. ♀♀. Kn25-287: 1 imm. ♀. 288: 1 imm. ♂, 1 imm. ♀. 291: 1 ad. ♀, 1 imm. ♀, 2 juv. Ch106-321: 3 ad. ♀♀, 1 juv. 323: 1 ad. ♂, 1 ad. ♀, 1 juv. 334: 1 ad. ♂, 2 imm. ♂♂, 20 ad. ♀♀, 29 imm. ♀♀, 2 juv. Kn35-340: 2 ad. ♀♀, 1 juv.

REMARKS. In this species there is a distinct keel, not shown in Fig. 6 (Jones, 1973), running backwards on either side from the antero-lateral angle not quite to the hind end of the carapace. This keel is not present in *P. hessleri*. The adult male, not previously known, resembles the male of *P. holti* in the general shape of its carapace and differs from the male of *P. hesserli*, but is noticeably smaller, less than 4 mm in length compared with more than 4 mm in the adult male of *P. holti*. As in the female the exopod of the uropod is comparatively long, nearly as long as the endopod.

DISTRIBUTION. Now recorded from both sides of the Atlantic from the tropical region northwards between 943 and 5000 m.

Platycuma hessleri Jones, 1973

(Fig. 33)

MATERIAL. IOS-6704: 1 imm. ♂. 6711: 1 imm. ♀. 6714: 1 ad. ♀. 7709 # 72: 3 ad. ♀♀. 7709 # 73: 4 imm. ♀♀. 7709 # 85: 1 imm. ♂, 1 ad. ♀. POLYGAS-DS21: 1 ad. ♂, 1 imm. ♀, 2 juv. BIOGAS II-DS31: 1 ad. ♀. BIOGAS III-DS41: 1 imm. ♂, 3 ad. ♀♀, 2 imm. ♀♀. BIOGAS V-DS66: 1 imm. ♂, 1 imm. ♀, 2 juv. DS67: 2 imm. ♀♀. BIOGAS VI-DS76: 1 imm. ♀. DS79: 1 imm. ♂, 1 imm. ♀. AII12-64: 1 ad. ♂, 5 imm. ♂♂, 26 ad. ♀♀, 6 imm. ♀♀, 11 juv. 66: 1 ad. ♂, 1 imm. ♂, 5 ad. ♀♀, 1 juv. 72: 2 ad. ♂♂, 1 ad. ♀. AII31-155: 2 ad. ♂♂, 1 imm. ♂, 6 ad. ♀♀. 156: 2 ad. ♂♂, 15 imm. ♂♂, 13 ad. ♀♀, 8 imm. ♀♀, 9 juv. AII42-195: 1 ad. ♀, 5 juv. Kn25-291: 1 imm. ♂. 306: 2 ad. ♀♀, 2 juv. Ch106-321: 5 imm. ♂♂, 1 ad. ♀, 5 imm. ♀♀, 1 juv. 323: 1 imm. ♂, 4 ad. ♀♀, 1 imm. ♀. Kn35-340: 1 ad. ♀, 2 juv.

REMARKS. The only notable difference in a larger female, length 6.7 mm, and the original description of an adult female, length 3.8 mm, is in the length and shape of the uropods (Fig. 33g). In the larger female, these are much longer than the last two pleonites together and the peduncles and endopod have distinct inner serrations, with some outer serrations at the base of the peduncle, which is somewhat tapered.

DISTRIBUTION. Widespread on both sides of the North and South Atlantic and in the tropical region between 2129 and 4715 m.

Platycuma candida sp. nov.

(Fig. 34)

MATERIAL. POLYGAS-DS20: 1 ad. ♀. BIOGAS III-DS41: 4 ad. ♂♂, 2 ad. ♀♀. BIOGAS IV-DS55: 4 ad. ♂♂, 4 imm. ♂♂, 2 ad. ♀♀, 11 imm. ♀♀, 10 juv. Ch106-326: 13 ad. ♂♂, 4 imm. ♂♂, 26 ad. ♀♀, 6 imm. ♀♀, 7 juv.

DESCRIPTION. Adult female, length 4.6 mm: carapace (Fig. 34a, b) entirely smooth, pearly white, more than twice as long as deep, laterally somewhat compressed, without lateral laminar expansions; pseudorostrum moderately long; antero-lateral angle only a little produced, without a tooth or serrations behind it; eyelobe rudimentary. Gut coiled. Anterior 4 pereonites with dorsal projections; last pereonite and first two pleonites with dorsal teeth.

Antenna 1 (Fig. 34c) with first two segments of peduncle about equal in length and each about $1\frac{1}{2}$ as long as the third. Maxilliped 3 (Fig. 34d) with basis a little curved, not much longer than remaining segments together. Pereopod 1 (Fig. 34e) with basis nearly $\frac{2}{3}$ as long as remaining segments together with a few teeth distally on its ventral edge; the ischium also has some ventral distal teeth; the merus is about twice as long as the ischium and less than

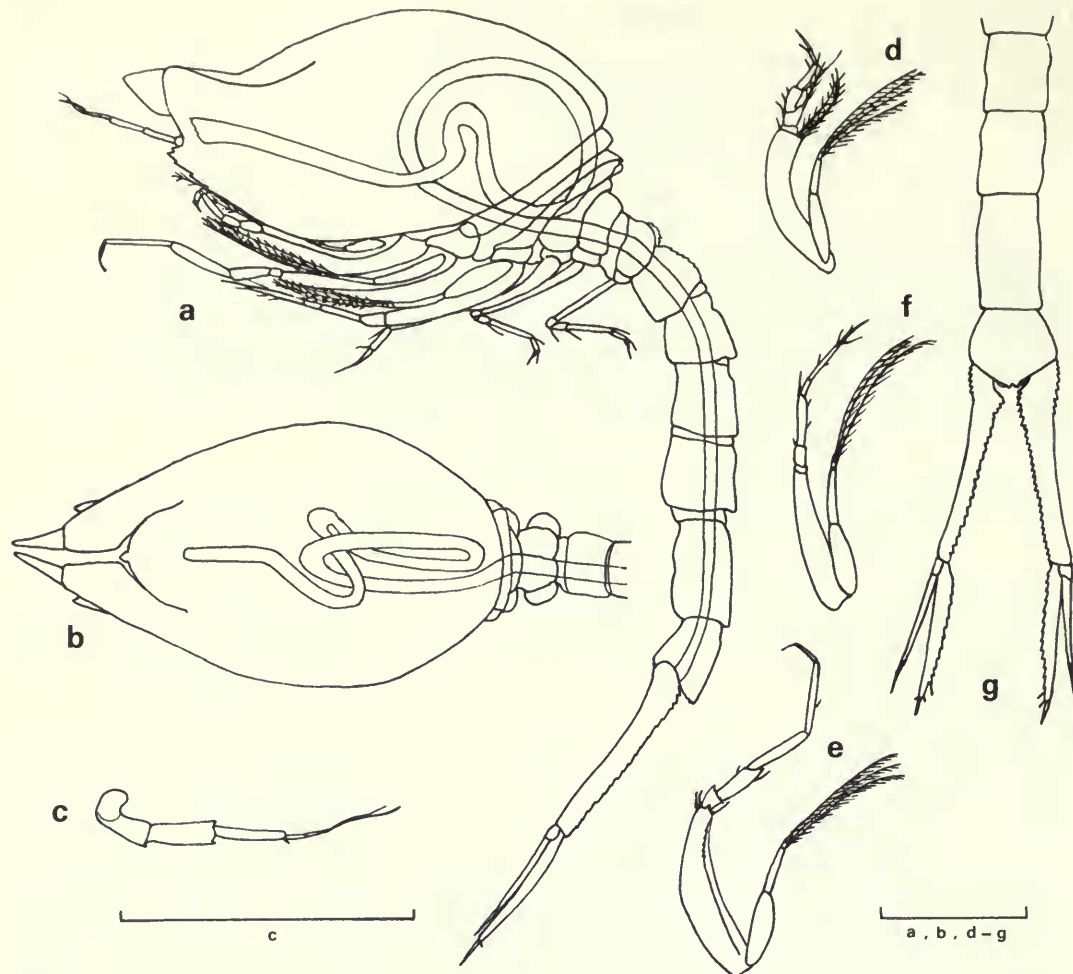


Fig. 33 *Platycuma hessleri* ♀, (a) lateral view; (b) carapace and pereon from above; (c) antenna 1; (d) maxilliped 3; (e) pereopod 1; (f) pereopod 2; (g) uropods and end of pleon.

2/3 as long as the carpus, which is a little longer than the propodus and twice as long as the dactyl. Pereopod 2 (Fig. 34f) with basis a little shorter than remaining segments together, the carpus very little longer than the dactyl and about three times as long as the propodus. Uropod (Fig. 34g) very little longer than the last two pleonites together, peduncle almost straight and with a few teeth near the base on the inner edge; the endopod is about 4/5 as long as the peduncle and has serrations and spines on its inner edge; the exopod is little more than 2/3 as long as the endopod.

Adult male. Generally similar to the female. The antero-lateral angle is marked by a spine. The second antennal flagellum is short.

TYPE LOCALITY. 50° 04.9' N–50° 05.3' N, 14° 23.8' W–14° 24.8' W, 3859 m. Type specimens deposited in the British Museum (Natural History). Holotype 1982 : 335 : 1, allotype 1982 : 336 : 1, paratypes 1982 : 337 : 10.

REMARKS. In appearance this species is similar to *Cumellopsis* from which it is distinguished only by the coiled gut. From *Platycuma hessleri*, which it generally resembles, it may be distinguished by the pearly white, almost iridescent, appearance of its carapace, which in the female is more than twice as long as deep but less than twice as long as deep in *P. hessleri*.

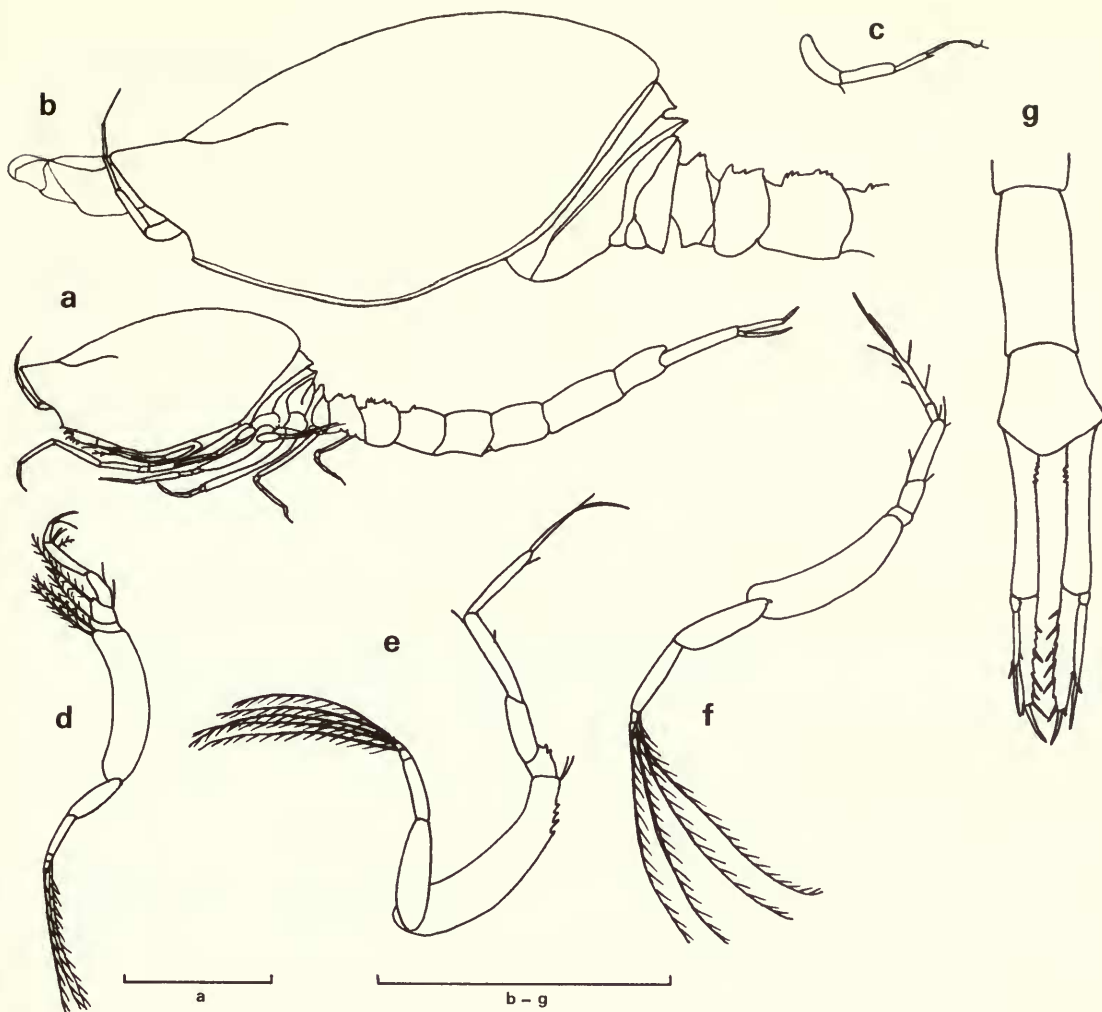


Fig. 34 *Platycuma candida* ♀, (a) lateral view; (b) carapace and pereon from side; (c) antenna 1; (d) maxilliped 3; (e) pereopod 1; (f) pereopod 2; (g) uropods and end of pleon.

DISTRIBUTION. Recorded so far at few stations west of Ireland and in the Bay of Biscay in rather deep water, between 3548 and 4226 m.

Genus *PROCAMPYLASPIS* Bonnier, 1896

Molar process of mandible styliform. Second maxillipeds with the dactyl shaped like a rake. First pereopod with the ischium long.

In this genus important distinguishing characters may be found in the armature of the carapace, the shape and armature of the eyelobe, the form of the dactyl in the second maxilliped and the relative proportions of the uropods. There is considerable sexual dimorphism in the adult stages and carapace armature and shape of males may differ from those of females.

Including the 8 new species described in this paper, there are now 21 species known in the genus.

Procampylaspis armata Bonnier, 1896

MATERIAL. MBAUK-29: 4 ad. ♀♀, 1 imm. ♀. 56: 3 ad. ♂♂, 3 imm. ♂♂, 15 ad. ♀♀, 14 juv. 65: 1 ad. ♂, 4 ad. ♀♀, 1 imm. ♀, 8 juv. IOS-6701: 1 ad. ♂, 6 ad. ♀♀. 6709: 2 imm. ♂♂, 1 ad. ♀, 1 juv. 6711: 1 ad. ♀. SMBA-ES4: 7 ad. ♂♂, 4 imm. ♂♂, 11 ad. ♀♀, 6 imm. ♀♀, 7 juv. ES12: 2 ad. ♂♂, 3 imm. ♂♂, 10 ad. ♀♀, 10 imm. ♀♀, 18 juv. *Thalassa* 70-W357: 7 ad. ♂♂, 12 ad. ♀♀, 5 imm. ♀♀, 40 juv. W371: 3 ad. ♂♂. *Thalassa* 72-Y374: 1 juv. *Thalassa* 73-Z399: 1 imm. ♀. Z416: 1 imm. ♀. Z428: 1 ad. ♂. Z434: 1 ad. ♂. Z440: 1 imm. ♀. Z443: 2 ad. ♂♂, 1 ad. ♀, 2 imm. ♀♀. BIOGAS I-DS05: 1 ad. ♀, 1 imm. ♀, 1 juv. DS09: 2 ad. ♂♂, 11 ad. ♀♀, 3 imm. ♀♀. DS11: 2 ad. ♀♀. DS12: 4 ad. ♀♀. DS13: 2 ad. ♂♂, 15 ad. ♀♀, 14 imm. ♀♀, 8 juv. POLYGAS-DS15: 3 ad. ♂♂, 5 imm. ♂♂, 44 ad. ♀♀, 54 imm. ♀♀. DS17: 2 imm. ♂♂, 5 ad. ♀♀, 2 juv. DS18: 4 ad. ♂♂, 8 imm. ♂♂, 22 ad. ♀♀, 34 imm. ♀♀. DS21: 3 imm. ♀♀. DS25: 4 ad. ♂♂, 3 imm. ♂♂, 10 ad. ♀♀, 2 imm. ♀♀, 5 juv. DS26: 6 ad. ♂♂, 18 ad. ♀♀, 13 imm. ♀♀. BIOGAS II-DS31: 4 ad. ♂♂, 1 imm. ♂, 5 ad. ♀♀, 3 imm. ♀♀. DS32: 1 ad. ♂, 3 imm. ♂♂, 8 ad. ♀♀, 1 imm. ♀. BIOGAS II-DS35: 5 ad. ♀♀, 7 imm. ♀♀. DS36: 8 ad. ♀♀, 2 imm. ♀♀. DS37: 5 ad. ♀♀, 2 juv. DS38: 1 imm. ♂, 2 ad. ♀♀, 4 imm. ♀♀. DS41: 5 ad. ♀♀. DS49: 1 imm. ♂, 3 ad. ♀♀, 4 imm. ♀♀, 1 juv. DS50: 3 ad. ♂♂, 7 imm. ♂♂, 6 ad. ♀♀, 8 imm. ♀♀, 1 juv. BIOGAS IV-DS51: 9 ad. ♂♂, 2 imm. ♂♂, 10 ad. ♀♀, 3 imm. ♀♀, 7 juv. DS52: 7 imm. ♂♂, 3 ad. ♀♀, 14 imm. ♀♀. DS62: 1 ad. ♂, 3 imm. ♂♂, 8 ad. ♀♀, 8 imm. ♀♀. DS63: 9 ad. ♀♀, 3 imm. ♀♀. DS64: 1 ad. ♂, 7 imm. ♀♀. BIOGAS VI-DS86: 12 ad. ♂♂, 7 imm. ♂♂, 9 ad. ♀♀, 11 imm. ♀♀, 1 juv. DS87: 4 ad. ♂♂, 3 imm. ♂♂, 24 ad. ♀♀, 7 imm. ♀♀, 13 juv. CP09: 4 ad. ♀♀, 9 imm. ♀♀, 8 juv. CP23: 1 imm. ♂, 6 imm. ♀♀, 17 juv. CP24: 2 ad. ♂♂, 1 imm. ♂. CP25: 3 imm. ♀♀. AII31-144: 1 ad. ♂. AII42-201: 1 ad. ♀, 1 imm. ♀, 3 juv. AII59-211: 22 ad. ♂♂, 105 ad. ♀♀, 4 juv. Kn25-295: 1 ad. ♂, 2 imm. ♂♂, 4 ad. ♀♀, 8 imm. ♀♀, 16 juv. 297: 3 ad. ♂♂, 6 imm. ♂♂, 16 ad. ♀♀, 23 imm. ♀♀.

DISTRIBUTION. Previously recorded from the north-east Atlantic and the Mediterranean, *P. armata* is now found to be widespread throughout the eastern part of the Atlantic both north and south of the equator and is also recorded from off Surinam. It occurs throughout a wide depth range, at least from 119 m to 4547 m, but mainly on the continental slope.

Procampylaspis bonnieri Calman, 1906

MATERIAL. SMBA-ES10: 22 ad. ♂♂, 13 imm. ♂♂, 46 ad. ♀♀, 18 imm. ♀♀, 35 juv. BIOGAS VI-DS76: 1 imm. ♂. AII31-156: 1 imm. ♂, 1 imm. ♀.

DISTRIBUTION. Found previously only in the Mediterranean between 950 and 1200 m and also between 466 and 2665 m (Reyss, 1972) it is now recorded from a few localities west of Scotland and in the Bay of Biscay as well as from the mid-Atlantic ridge between Dakar and Recife in depths down to 4228 m.

Procampylaspis bituberculata Hansen, 1920

MATERIAL. SMBA-ES18: 1 imm. ♀. ES20: 2 ad. ♂♂, 1 imm. ♂, 4 ad. ♀♀. *Thalassa* 72-Y374: 2 ad. ♀♀, 1 imm. ♀, 1 juv. *Thalassa* 73-Z400: 2 ad. ♀♀. Z429: 1 ad. ♂, 2 imm. ♂♂, 3 ad. ♀♀, 9 imm. ♀♀. Z442: 1 ad. ♀. Z451: 1 ad. ♀. BIOGAS I-DS14: 1 ad. ♂, 4 ad. ♀♀. BIOGAS II-DS33: 2 ad. ♂♂, 3 imm. ♂♂, 5 ad. ♀♀, 1 imm. ♀, 8 juv. DS34: 1 imm. ♂.

REMARKS. The male has less pronounced tubercles than the female. The female has relatively short uropod peduncles.

DISTRIBUTION. Previously recorded only from south-west of the Faroes in 847–941 m, it has now been found at several stations west of Scotland and in Biscay between 975 and 2338 m.

Procampylaspis macronyx Hansen, 1920

MATERIAL. MBAUK-44: 1 imm. ♂, 1 imm. ♀. SMBA-ES20: 6 ad. ♀♀, 1 imm. ♀. ES140: 1 imm. ♂, 1 imm. ♀. ES147: 2 ad. ♀♀. *Thalassa* 73-Z429: 1 ad. ♀, 1 juv. Z436: 1 imm. ♂. Z447: 2 ad. ♀♀. BIOGAS I-DS13: 1 imm. ♂. POLYGAS-DS15: 4 imm. ♀♀, 6 juv. DS16: 1 ad. ♀, 1 juv. DS18: 1 ad. ♂, 2 imm. ♂♂, 4 ad. ♀♀. BIOGAS VI-DS79: 1 imm. ♂. Ch106-321: 1 ad. ♂, 1 imm. ♂. 323: 1 ad. ♀.

DISTRIBUTION. Recorded by Hansen from two localities west of Iceland and south-west of the Faroes between 975 and 1441 m. It is now recorded from a number of stations west of Scotland and in Biscay down to 4715 m in greater numbers than *P. bituberculata*.

Procampylaspis arguini Bacescu and Muradian, 1972

MATERIAL. SMBA-ES18: 1 ad. ♂, 8 imm. ♂♂, 1 imm. ♀, 2 juv. AII42-189: 8 ad. ♂♂, 18 ad. ♀♀. 192: 5 ad. ♀♀. 200: 1 imm. ♂, 1 ad. ♀, 1 juv. 201: 1 ad. ♀, 1 juv.

DISTRIBUTION. Originally found off the coast of Morocco in only 22 m, it is now recorded in greater depths off the west of Scotland and south-west Africa between 1014 and 2754 m.

Procampylaspis thalassae Bacescu and Muradian, 1972

MATERIAL. IOS-6697: 1 ad. ♂. AII42-202: 1 imm. ♂, 1 juv.

DISTRIBUTION. Also recorded from the Moroccan coast in 227–286 m, it is now recorded at a station off the Canary Islands in 1564 m and another off south-west Africa in 1643 m.

Procampylaspis inermis sp. nov.

(Fig. 35)

MATERIAL. SMBA-ES20: 2 ad. ♂♂, 2 imm. ♂♂, 9 ad. ♀♀, 4 imm. ♀♀, 1 juv. *Thalassa* 73-Z425: 1 ad. ♂. POLYGAS-DS20: 4 imm. ♂♂, 2 ad. ♀♀. AII12-70: 3 ad. ♂♂, 3 imm. ♂♂, 11 ad. ♀♀. 73: 24 ad. ♂♂, 3 imm. ♂♂, 46 ad. ♀♀, 25 imm. ♀♀. Ch58-103: 5 ad. ♂♂, 8 imm. ♂♂, 31 ad. ♀♀, 1 imm. ♀. AII24-125: 1 ad. ♀. AII30-131: 4 ad. ♂♂, 9 imm. ♂♂, 24 ad. ♀♀, 1 imm. ♀, 1 juv. AII31-142: 2 ad. ♂♂, 10 ad. ♀♀, 2 imm. ♀♀. Ch88-209: 1 imm. ♂, 1 imm. ♀. Kn25-293: 22 ad. ♂♂, 19 imm. ♂♂, 170 ad. ♀♀, 15 imm. ♀♀. 299: 2 ad. ♂♂, 3 ad. ♀♀, 2 imm. ♀♀. 301: 5 ad. ♂♂, 22 ad. ♀♀, 5 imm. ♀♀. 303: 4 ad. ♂♂, 4 ad. ♀♀, 5 imm. ♀♀. Ch106-318: 1 imm. ♀. 321: 1 ad. ♂, 2 ad. ♀♀.

DESCRIPTION. Ovigerous female, length 3.1 mm: carapace (Fig. 35a, b) smooth except for fairly long scattered setae, without spines, $1\frac{2}{3}$ as long as deep; pseudorostrum truncate anteriorly, a little more than $\frac{1}{6}$ of the total carapace length, siphons short; antero-lateral angle little produced, marked by a small spine; eyelobe pointed, less than $\frac{1}{3}$ as long as pseudorostrum, longer than the breadth at its base. Pereon and pleon somites without spines or other projections apart from a few setae.

Antenna 1 (Fig. 35e) with basal segment slender, a little longer than the subequal second and third. Maxilliped 2 (Fig. 35f, g) with dactylar projections rather narrow, the basal one bifid followed by two longer more distal projections with a short one between them. Maxilliped 3 (Fig. 35h) with basis narrow, somewhat curved, a little projecting distally, nearly as long as remaining segments together; merus long but not much expanded, nearly as long as subequal carpus and propodus together; propodus about twice as long as dactyl. Pereopod 1 (Fig. 35i) with basis narrow distally, little more than half as long as remaining segments together. Pereopod 2 (Fig. 35j) with basis somewhat more than half as long as remaining segments together; dactyl about as long as merus and carpus together and more than three times as long as propodus; the carpus is broadened distally and has a spine on its lower distal point. Uropod (Fig. 35k) slender, with peduncle distinctly longer than last two pleonites together and nearly $1\frac{1}{2}$ as long as the endopod which is much longer than the exopod; the peduncle has a few setae along either side and the endopod about three spines on its inner edge and a robust terminal spine; the terminal spine of the exopod is long and slender and reaches about as far as the terminal spine of the endopod.

Adult male, length 3.0 mm: carapace (Fig. 35c, d) less arched dorsally and narrower than in adult female and showing a marked hexagonal reticulate pattern; the antero-lateral angles are more prominent. In other respects it has the usual differences from the female.

TYPE LOCALITY. 8° 28.8' N, 56° 04.5' W, 2842–2853 m. Type specimens deposited in the British Museum (Natural History). Holotype 1982 : 338 : 1, allotype 1982 : 339 : 1, paratypes 1982 : 340 : 10.

REMARKS. *P. inermis* is characterized by its lack of armature apart from setae on the carapace and by the eyelobe which although without lenses is of normal shape, neither small or elongated.

DISTRIBUTION. Found on either side of the Atlantic from the tropical region northwards between 700 and 4825 m depth.

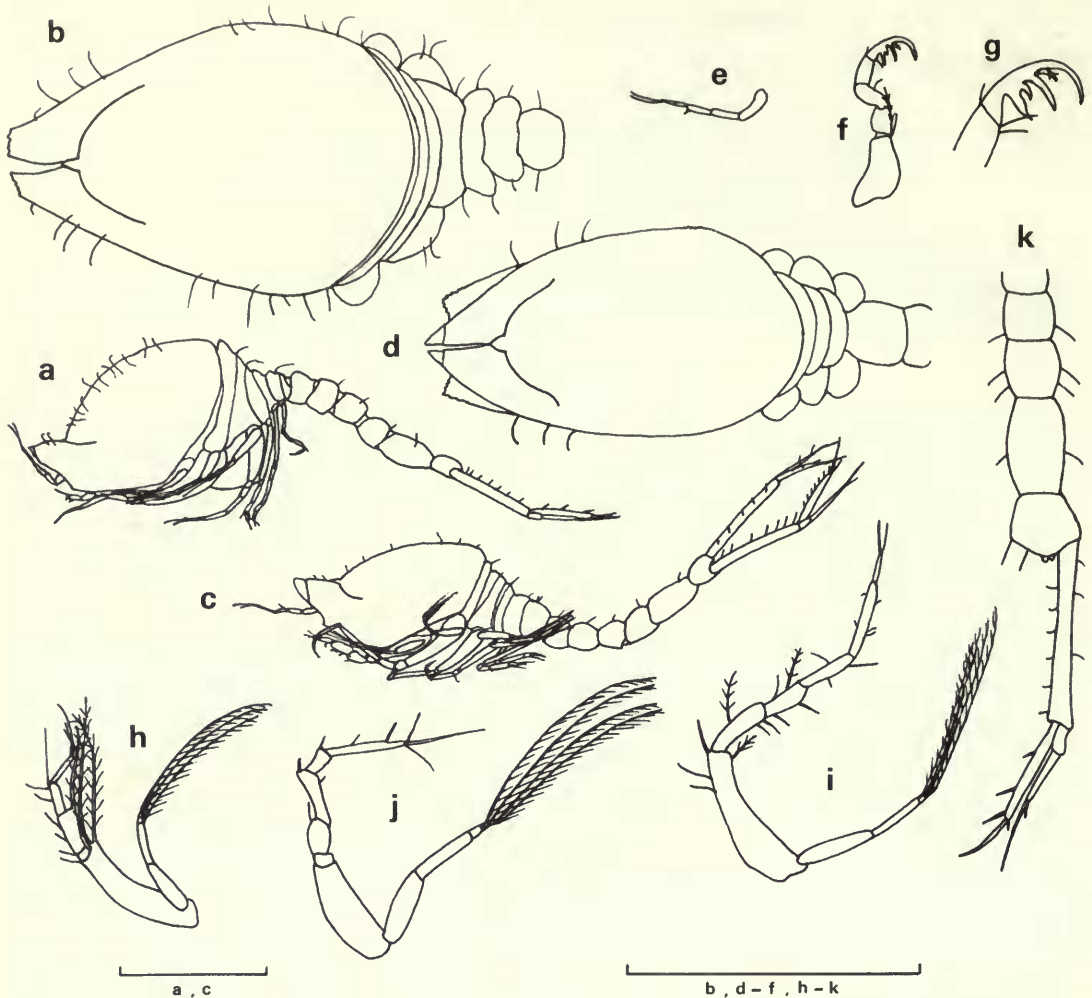


Fig. 35 *Procampylaspis inermis*, (a) ovigerous ♀ from side; (b) ♀ carapace and pereon from above; (c) adult ♂ from side; (d) ♂ carapace and pereon from above; (e) ♀ antenna 1; (f) maxilliped 2; (g) distal part of maxilliped 2 (further enlarged); (h) maxilliped 3; (i) pereopod 1; (j) pereopod 2; (k) uropod and end of pleon.

Procampylaspis procurrens sp. nov.

(Fig. 36)

MATERIAL. AII42-195: 3 imm. ♀♀, 1 juv. AII60-239: 1 ad. ♀. 240: 16 ad. ♂♂, 9 imm. ♂♂, 47 ad. ♀♀, 27 imm. ♀♀, 8 juv. 245: 7 ad. ♂♂, 8 ad. ♀♀, 6 imm. ♀♀. 262: 3 ad. ♂♂, 6 imm. ♂♂, 22 ad. ♀♀, 32 imm. ♀♀. 264: 2 juv.

DESCRIPTION. Adult female, length 3.9 mm: carapace (Fig. 36a, b) raised dorsally, more than $1\frac{1}{2}$ as long as deep, with a single fairly prominent forward-pointing mid-dorsal spine and few scattered setae; antero-lateral angle distinct but blunt; the eyelobe is fairly but not very narrow and reaches forward to about $\frac{2}{3}$ as far as the pseudorostrum, ending in a forward-pointing spine, which may occasionally have a smaller spine behind it; the pseudorostrum is abruptly truncate in front. The first two pereon somites are produced dorsally into bifid lappets and the last two have small dorsal spines. The pleon somites are usually without spines or projections but there are sometimes a few blunt spines dorso-laterally on pleonite 5.

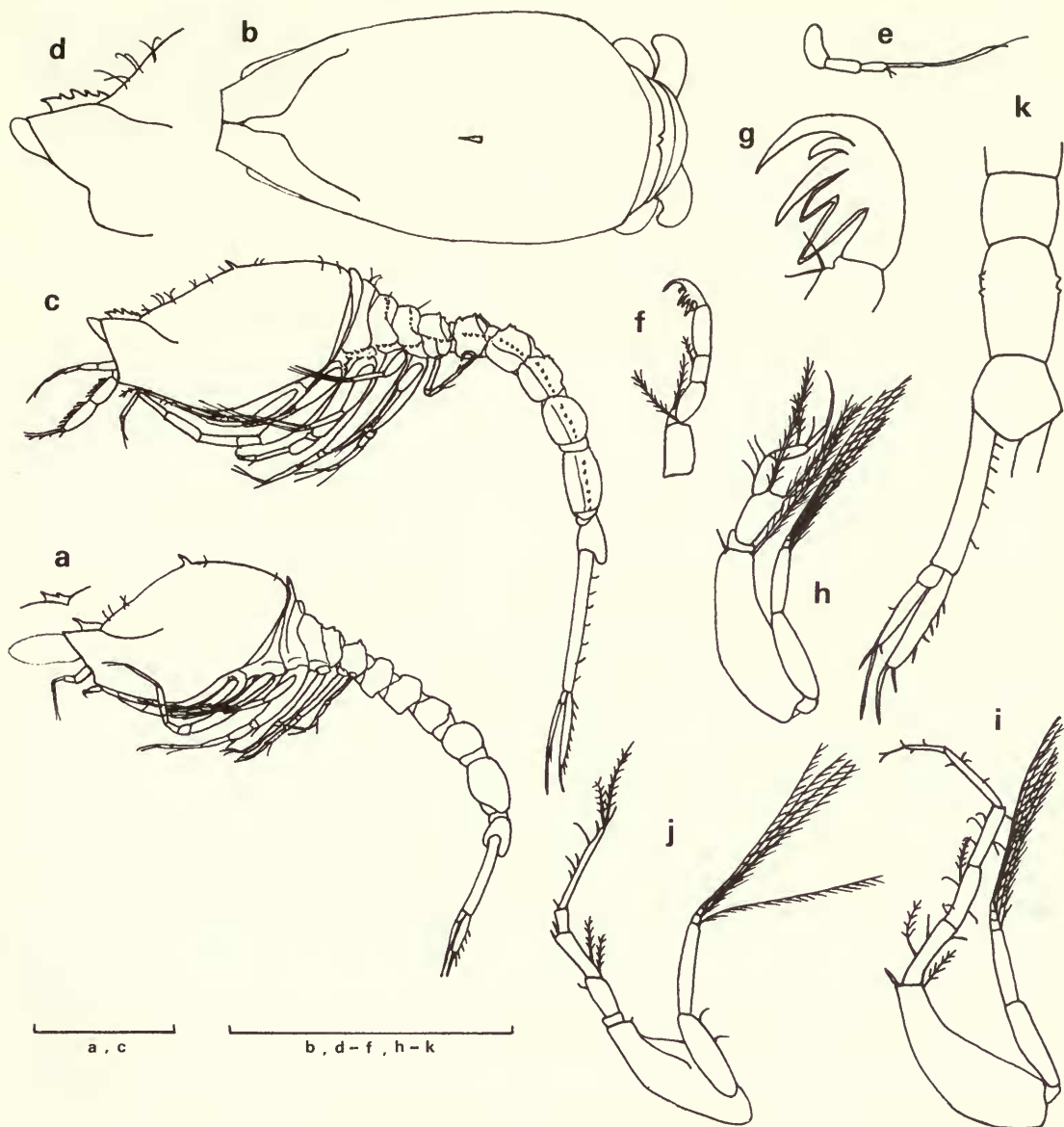


Fig. 36 *Procampylaspis procurrens*, (a) adult ♀ from side; (b) ♀ carapace and pereon from above; (c) adult ♂ from side; (d) adult ♂ front of carapace from side; (e) ♀ antenna 1; (f) maxilliped 2; (g) distal part of maxilliped 2 (further enlarged); (h) maxilliped 3; (i) pereopod 1; (j) pereopod 2; (k) uropod and end of pleon.

Antenna 1 (Fig. 36e) has the three peduncle segments diminishing in length distally, the basal segment fairly robust. Maxilliped 2 (Fig. 36f, g) with dactylar spines rather broad, the basal unequally bifid and the most distal not noticeably longer than the medial spines. Maxilliped 3 (Fig. 36h) with basis about as long as remaining segments together, the merus broadened distally. Pereopod 1 (Fig. 36i) with basis broad at base, little more than half as long as remaining segments together, with a prominent distal spine; the ischium is slender and longer than the merus. Pereopod 2 (Fig. 36j) with basis about $\frac{3}{4}$ as long as remaining segments together, the carpus with two distal spines, the dactyl slender and much longer

than the carpus and propodus together. Uropod (Fig. 36k) with basis distinctly shorter than last two pleon somites together, about $1\frac{1}{2}$ as long as the endopod, which is fairly broad and not much longer than the exopod; the peduncle has a few setae on its inner edge and the endopod some slender spines but there are no pronounced serrations.

Adult male, length 4.6 mm. Differing from female in usual characters but additionally the carapace (Fig. 36c) is less arched and the eyelobe (Fig. 36d) has about 5 teeth in a single row mid-dorsally, there are more projections on the pereon and pleon somites, especially in a dorso-lateral row on either side, and the uropod is longer and more slender.

TYPE LOCALITY. 36° 55.7' S, 53° 01.4' W, 2702 m. Type specimens deposited in the British Museum (Natural History). Holotype 1982:341:1, allotype 1982:342:1, paratypes 1982:343:10.

REMARKS. *P. procurrens* may be distinguished by the single procurved mid-dorsal spine on the carapace in either sex and by the eyelobe which is elongated but not narrow, ending in a strong spine, and with a single row of spines or serrations behind this in the male; there may be a further spine or tooth behind the end spine in the female. From *P. acanthomma* sp. nov. which it somewhat resembles it is further distinguished by the relative shortness of the terminal spine on the dactyl of the second maxilliped.

DISTRIBUTION. Found at present on either side of the South Atlantic, from off South-west Africa and the Argentine in depths between 1679 and 3797 m.

Procampylaspis lutensis sp. nov.

(Fig. 37)

MATERIAL. IOS-6696: 2 juv. 6697: 1 ad. ♂, 1 imm. ♂. 6701: 2 ad. ♂♂, 1 ad. ♀. 6714: 1 ad. ♀. SMBA-ES18: 4 ad. ♂♂, 3 imm. ♂♂, 21 ad. ♀♀, 3 imm. ♀♀. *Thalassa* 73-Z421: 1 ad. ♀, 1 imm. ♀, Z422: 1 imm. ♀. Z428: 2 imm. ♀♀. Z435: 1 ad. ♀. Z438: 1 ad. ♂, 1 ad. ♀. 2445: 1 ad. ♂, 2 ad. ♀♀, 1 imm. ♀. Z453: 1 imm. ♂, 2 ad. ♀♀, 1 imm. ♀. BIOGAS I-DS05: 6 ad. ♂♂, 2 imm. ♂♂, 8 ad. ♀♀, 7 juv. DS06: 4 ad. ♀♀, 3 imm. ♀♀. DS07: 1 ad. ♂, 1 ad. ♀. DS08: 1 ad. ♀. DS11: 3 imm. ♂♂, 8 ad. ♀♀. DS13: 2 ad. ♂♂, 7 ad. ♀♀, 2 imm. ♀♀. DS14: 2 ad. ♂♂. POLYGAS-DS15: 6 ad. ♂♂, 7 imm. ♂♂, 24 ad. ♀♀, 3 imm. ♀♀. DS17: 2 ad. ♂♂, 1 imm. ♂, 2 ad. ♀♀, 1 imm. ♀. DS18: 14 ad. ♂♂, 15 imm. ♂♂, 34 ad. ♀♀, 2 imm. ♀♀. DS25: 5 ad. ♂♂, 7 ad. ♀♀, 2 juv. DS26: 1 ad. ♂, 2 ad. ♀♀. BIOGAS II-DS32: 1 ad. ♀. BIOGAS III-DS35: 3 imm. ♂♂, 3 ad. ♀♀. DS36: 2 imm. ♂♂, 2 ad. ♀♀, 3 imm. ♀♀. DS37: 3 ad. ♂♂, 3 ad. ♀♀. DS50: 1 ad. ♂, 1 imm. ♂. BIOGAS IV-DS51: 1 ad. ♂, 1 imm. ♂, 5 ad. ♀♀, 4 imm. ♀♀, 5 juv. DS52: 2 ad. ♂♂, 1 imm. ♂, 4 ad. ♀♀, 6 imm. ♀♀. DS55: 1 imm. ♂, 5 ad. ♀♀, 4 imm. ♀♀. DS62: 1 ad. ♀. DS63: 2 ad. ♂♂, 1 imm. ♂, 1 ad. ♀. DS64: 10 ad. ♂♂, 1 imm. ♂, 7 ad. ♀♀, 1 imm. ♀. BIOGAS V-DS66: 2 ad. ♂♂, 5 ad. ♀♀. DS67: 2 ad. ♂♂, 1 imm. ♂, 2 imm. ♀♀. BIOGAS VI-DS86: 3 ad. ♂♂, 9 imm. ♂♂, 7 ad. ♀♀, 14 imm. ♀♀, 5 juv. DS87: 14 ad. ♂♂, 5 ad. ♀♀, 11 imm. ♀♀, 8 juv. DS88: 1 ad. ♀, 1 juv. CP09: 2 ad. ♀♀, 4 imm. ♀♀. CP23: 3 ad. ♂♂, 7 imm. ♂♂, 3 ad. ♀♀, 5 imm. ♀♀, 4 juv. CP24: 2 ad. ♂♂, 5 imm. ♀♀. CP25: 7 ad. ♂♂, 3 imm. ♂♂, 9 ad. ♀♀, 4 imm. ♀♀, 8 juv. All31-142: 4 ad. ♂♂, 1 imm. ♂, 4 ad. ♀♀, 3 imm. ♀♀.

DESCRIPTION. Adult female, length 2.8 mm: carapace (Fig. 37a-c) not much elevated dorsally, almost twice as long as deep, usually but not always with a small mid-dorsal spine; pseudorostrum abruptly truncated in front, siphons fairly long; eyelobe narrow, not elongated, reaching less than half way to the tip of the pseudorostrum, upstanding in front, ending in a small forward-pointing spine; antero-lateral angle only slightly prominent. Anterior pereon somites with bifid dorsal lappets but posterior pereonites and pleon somites without projections.

Antenna 1 (Fig. 37d) with basal segment curved, fairly slender, about $1\frac{1}{2}$ as long as subequal second or third segments. Maxilliped 2 (Fig. 37e-f) with most distal dactylar spine distinctly longer than the others. Maxilliped 3 (Fig. 37g) with basis nearly as long as remaining segments together, the merus slender but wider distally, about $1\frac{1}{2}$ as long as the carpus, which is about as long as the propodus and longer than the dactyl. Pereopod 1 (Fig. 37h) with basis about $\frac{2}{3}$ as long as remaining segments together; the propodus is about twice as long as the dactyl and slightly longer than the merus which is itself a little longer than the subequal

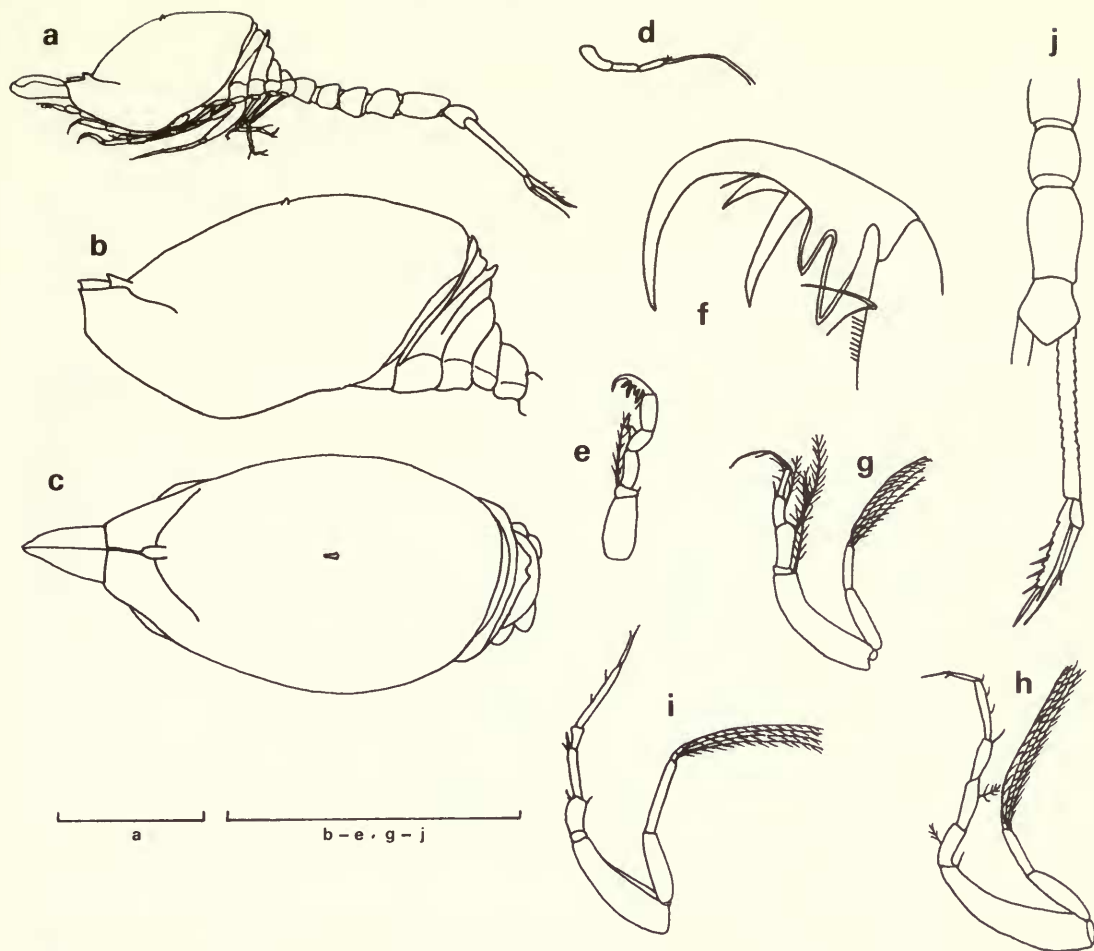


Fig. 37 *Procampylaspis lutensis* ♀, (a) lateral view; (b) carapace and pereon from side; (c) carapace and pereon from above; (d) antenna 1; (e) maxilliped 2; (f) distal part of maxilliped 2 (further enlarged); (g) maxilliped 3; (h) pereopod 1; (i) pereopod 2; (j) uropod and end of pleon.

ischium or carpus. Pereopod 2 (Fig. 37i) with basis less than $\frac{2}{3}$ as long as remaining segments together; the relative proportions of the other segments much as in *P. inermis*. Uropods (Fig. 37j) with peduncle a little longer than the last two pleonites together and nearly twice as long as the endopod, which is about $1\frac{1}{3}$ as long as the exopod; the peduncle is serrated on the inner and outer edges and the endopod on its inner edge where there are also about 4 slender spines.

Adult male differs from female in usual respects.

TYPE LOCALITY. 56° 44' N, 09° 20' W, 1392–1450 m. Type specimens deposited in the British Museum (Natural History). Holotype 1982 : 344 : 1, allotype 1982 : 345 : 1, paratypes 1982 : 346 : 10.

REMARKS. In *P. lutensis* the eyelobe, although a little elongated and ending in a short spine, is less than half as long as the pseudorostral lobes. There is a single short mid-dorsal spine on the carapace which lacks other spines or setae.

DISTRIBUTION. Recorded in some quantity from the eastern side of the Atlantic from tropics northwards, between 720 and 4150 m depth.

Procampylaspis acanthomma sp. nov.

(Fig. 38)

MATERIAL. All31-155: 2 ad. ♂♂, 1 ad. ♀. 156: 5 ad. ♂♂, 5 imm. ♂♂, 22 ad. ♀♀, 4 imm. ♀♀. 159: 3 imm. ♀♀, 3 juv. 167: 2 ad. ♂♂, 4 imm. ♂♂, 2 ad. ♀♀, 1 imm. ♀. 169: 2 ad. ♂♂, 5 imm. ♂♂, 12 ad. ♀♀, 5 imm. ♀♀. Kn25-291: 1 ad. ♂, 1 ad. ♀, 2 imm. ♀♀, 1 juv. 306: 2 imm. ♂♂, 3 imm. ♀♀, 1 juv. Ch106-321: 4 ad. ♂♂, 22 ad. ♀♀, 5 imm. ♀♀, 1 juv. 323: 3 ad. ♂♂, 2 ad. ♀♀, 1 juv. 326: 1 imm. ♀.

DESCRIPTION. Adult female, length 3.7 mm: carapace (Fig. 38a-c) without spines but with slight dorsal serrations and scattered setae, about $1\frac{3}{4}$ as long as deep, its integument covered with small irregular hexagonal reticulations; the pseudorostrum is fairly long, abruptly truncated in front, less than $1/6$ of total carapace length, with a shallow but distinct antennal notch defined below by a rounded antero-lateral angle; the siphons are not very long; the eyelobe is fairly long and narrow in front, reaching a little beyond the middle of the pseudorostrum and ending in front with a prominent spine. The pereon and pleon somites are without spines but there are some setae on the pereon and faint serrations on the pleon; the first two pereonites have bifid lappets dorsally.

Antenna 1 (Fig. 39f) with basal segment fairly stout, curved, about $1\frac{1}{2}$ as long as the much longer than the third. Maxilliped 2 (Fig. 38f, g) with shorter part of bifid basal spine of dactyl much less than half as long as longer part; most distal spine somewhat longer than others. Maxilliped 3 (Fig. 38h) with basis a little shorter than remaining segments together, a little produced at its upper distal extremity and with some serrations or blunt spines distally below; the ischium has a spine on its lower edge; the merus is narrow and slightly shorter than the carpus. Pereopod 1 (Fig. 38i) with basis about $2/3$ as long as remaining segments together; the propodus is distinctly longer than the carpus and three times as long as the dactyl. Pereopod 2 (Fig. 38j) with basis little more than half as long as remaining segments together; the relative lengths of these are much as in *P. lutensis*, except that of the dactyl, which is nearly as long as the merus and carpus combined. Uropods (Fig. 38k) with peduncle moderately long, distinctly longer than last two pleonites together and a little more than $1\frac{1}{2}$ as long as the endopod, which is less than $1\frac{1}{2}$ as long as the exopod; the peduncle is smooth with a few short setae and the endopod has a few slender spines on its inner edge.

Adult male (Fig. 38d) showing usual differences from female but also with many short spines dorsally and on the sides posteriorly on the carapace. There are spines dorsally and laterally on the pereon and at the sides of the pleon somites.

TYPE LOCALITY. 00° 46' S-00° 46.5' S, 29° 28' W-29° 24' W, 3459 m. Type specimens deposited in the British Museum (Natural History). Holotype 1982:347:1, allotype 1982:348:1, paratypes 1982:349:10.

REMARKS. The lack of carapace spines in the female, on which there are only a few low serrations and some setae, together with the fairly elongate eyelobe ending in a prominent spine, distinguishes this species. The adult male is characterised by the fairly large number of small spines dorsally and on the pereon.

DISTRIBUTION. Found on a few occasions off Brazil in the tropical Atlantic and off Surinam and west of Ireland in the North Atlantic between 587 and 3868 m.

Procampylaspis serratoculus sp. nov.

(Fig. 39)

MATERIAL. All31-169: 3 ad. ♂♂, 10 imm. ♂♂, 27 ad. ♀♀, 4 imm. ♀♀. Kn25-295: 8 ad. ♂♂, 9 imm. ♂♂, 34 ad. ♀♀, 34 imm. ♀♀.

DESCRIPTION. Adult female, length 4.3 mm: carapace (Fig. 39a-c) less than twice as long as deep, integument with regular small hexagonal reticulations and with some spines in pairs or rows dorso-laterally; the pseudorostrum is about $1/7$ of the total carapace length, abruptly truncate in front with fairly long siphons; the antennal notch is hardly defined and the antero-lateral angle is not at all prominent but is followed by a few small serrations; on either

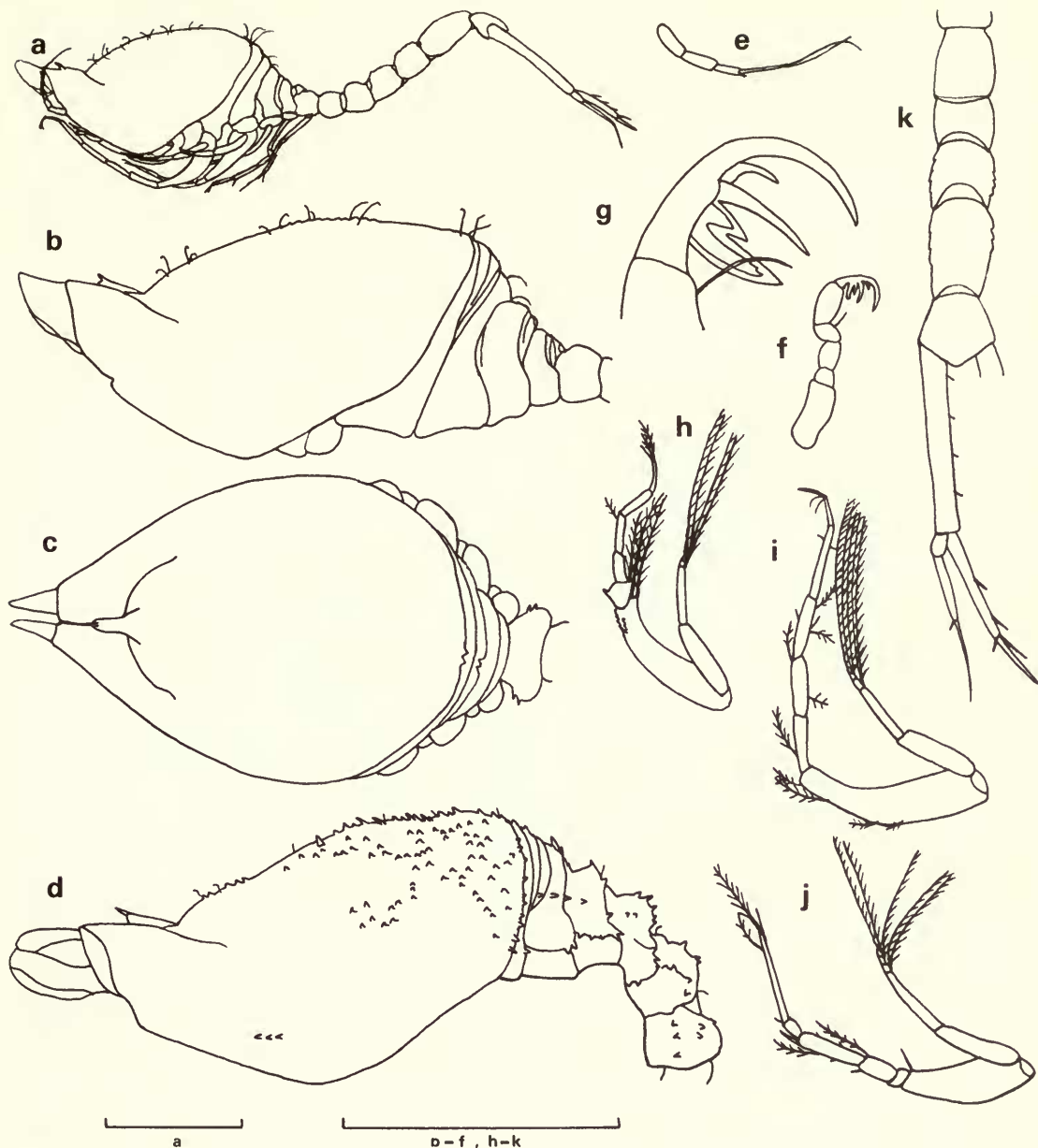


Fig. 38 *Procampylaspis acanthomma*, (a) adult ♀ from side; (b) ♀ carapace and pereon from side; (c) ♀ carapace and pereon from above; (d) adult ♂ carapace and pereon from side; (e) ♀ antenna 1; (f) maxilliped 2; (g) distal part of maxilliped 2 (further enlarged); (h) maxilliped 3; (i) pereopod 1; (j) pereopod 2; (k) uropod and end of pleon.

side, a little set in from the edge is a fairly prominent spine; the eyelobe reaches about half way towards the front of the pseudorostrum; it is wider towards the front where there is a pair of spines followed by usually four in each of two rows diminishing in size towards the hind end. The anterior pereon somites are without spines but the first two have well defined paired dorsal lappets at their hind ends (Fig. 39d). There are a few small spines dorsally on the posterior pereon and pleon somites and the last two pleonites have some lateral spines.

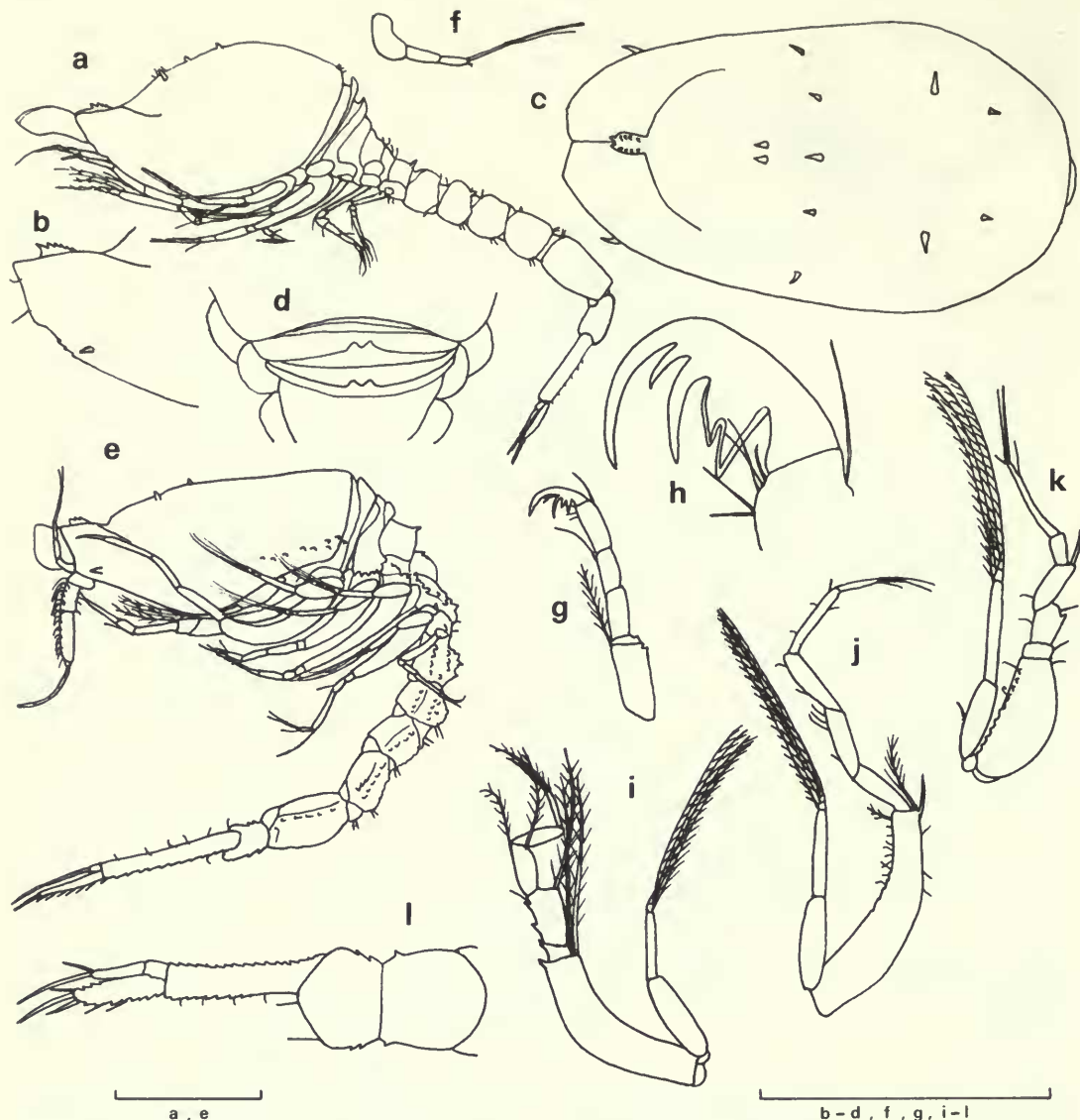


Fig. 39 *Procampylaspis serratoculus*, (a) adult ♀ from side; (b) ♀ front of carapace from side; (c) ♀ carapace from above; (d) ♀ hind end of carapace and pereon from above; (e) adult ♂ from side; (f) ♀ antenna 1; (g) maxilliped 2; (h) distal part of maxilliped 2 (further enlarged); (i) maxilliped 3; (j) pereopod 1; (k) pereopod 2; (l) uropod and end of pleon.

Antenna 1 (Fig. 39f) with basal segment fairly stout, curved, about $1\frac{1}{2}$ as long as the second segment which is longer than the third. Maxilliped 2 (Fig. 39g, h) with most distal dactylar spine rather longer than the remainder, the basal spine bifid. Maxilliped 3 (Fig. 39i) with basis curved, a little shorter than remaining segments together, with a small spine at its distal lower edge, the merus expanded distally above and with two blunt spines or serrations below; the merus is only slightly longer than the carpus, the propodus and dactyl being successively somewhat shorter. Pereopod 1 (Fig. 39j) with basis about $\frac{2}{3}$ as long as remaining segments together, with a long distal spine on its lower edge and some serrations above; the ischium, merus and carpus are about equal in length and each distinctly shorter

than the propodus which is almost twice as long as the dactyl. Pereopod 2 (Fig. 39k) with basis stout, having a row of blunt spines along its upper edge; there is a short spine on the lower edge of the merus and a longer spine at the lower distal end of the carpus; the dactyl is long and a little curved, nearly three times as long as the propodus and $1\frac{1}{2}$ as long as the carpus. Uropod (Fig. 39l) with peduncle rather short, serrated along both edges, shorter than the last two pleonites together and less than twice as long as the endopod; this has serrations on either edge and about three spines on the inner edge, with a long terminal spine; the exopod is serrated along the inner edge and is more than $\frac{3}{4}$ as long as the endopod.

Adult male, length 5.3 mm (Fig. 39e) differs in usual characters from female and has an irregular row of spines ventro-laterally on the hinder part of the carapace. There are many more spines laterally on the pereon somites and especially in rows at the sides of the pleon.

TYPE LOCALITY. 08° 03' S–08° 02' S, 34° 23' W–34° 25' W, 587 m. Type specimens deposited in the British Museum (Natural History). Holotype 1982:350:1, allotype 1982:351:1, paratypes 1982:352:10.

REMARKS. *P. serratoculus* is easily distinguished from other known species in the genus by the double row of spines or teeth on the prominent eyelobe. Although *P. procurrens* has several teeth on the eyelobe in the adult male these are in a single row.

DISTRIBUTION. Recorded at present from two stations only off the coasts of Brazil in 587 m and Surinam at 1000 m.

Procampylaspis ommidion sp. nov.

(Fig. 40)

MATERIAL. IOS-6697: 2 ad. ♀♀, 6701: 2 imm. ♀♀, SMBA-ES12: 2 ad. ♂♂, 3 imm. ♂♂, 2 ad. ♀♀, 5 imm. ♀♀, ES15: 2 ad. ♂♂, 1 imm. ♂, 14 ad. ♀♀, 4 imm. ♀♀, 16 juv. ES18: 2 imm. ♀♀, ES22: 2 ad. ♂♂, 3 imm. ♂♂, 9 ad. ♀♀, 9 imm. ♀♀, 4 juv. *Thalassa* 73-Z426: 9 imm. ♀♀, Z447: 3 imm. ♂♂, Z459: 2 imm. ♂♂, 7 imm. ♀♀, POLYGAS-DS15: 3 imm. ♂♂, 1 ad. ♀, DS16: 1 imm. ♂, 1 imm. ♀, DS18: 1 ad. ♀, 1 juv. BIOGAS III-DS41: 1 ad. ♂, 2 imm. ♂♂, 19 ad. ♀♀, 1 imm. ♀, BIOGAS VI-DS74: 1 ad. ♂, 2 imm. ♂♂, 1 ad. ♀, *Atlantis* 248-G # 9: 1 ad. ♂, 1 ad. ♀, AII12-61: 1 juv. Ch50-84: 7 imm. ♂♂, 4 ad. ♀♀, 85: 1 ad. ♂, 2 imm. ♂♂, 5 ad. ♀♀, AII23-106: 1 ad. ♂, AII24-118: 1 ad. ♂, 7 ad. ♀♀, 2 imm. ♀♀, 119: 2 ad. ♀♀, AII31-155: 1 ad. ♂, 1 imm. ♂, 5 ad. ♀♀, 2 imm. ♀♀, Ch106-334: 3 ad. ♂♂, 5 imm. ♂♂, 33 ad. ♀♀, 28 imm. ♀♀, 17 juv.

DESCRIPTION. Ovigerous female, length 4.7 mm: carapace (Fig. 40a, b) about twice as long as deep, less than $1\frac{1}{2}$ as long as broad, broader posteriorly, with a single mid-dorsal blunt spine or prominence and some short setae; the integument shows a faint reticulate pattern; pseudorostrum about $\frac{1}{6}$ of total carapace length, truncated in front but not abruptly, with some slight serrations anteriorly; the siphons are fairly long; the antero-lateral angle is scarcely apparent but there are some serrations behind it; the eyelobe is small but sharply pointed in front. The anterior pereonites have dorsal bifid lappets but otherwise pereon and pleon somites have only a few short setae.

Antenna 1 (Fig. 40c) with basal segment little curved, about as long as the second and third combined. Maxilliped 2 (Fig. 40d, e) comparatively stout; merus with some blunt distal spines; propodus with a lobed hyaline membrane along the inner edge; basal spine on dactyl bifid and most distal spine longer than others but not projecting much farther inwards. Maxilliped 3 (Fig. 40f) with basis a little shorter than remaining segments together, somewhat produced at its distal upper end; merus long, broadened distally, as long as carpus and propodus together; carpus with several fragile spines on upper edge. Pereopod 1 (Fig. 40g) with basis scarcely more than half as long as remaining segments together; ischium slender, longer than merus or propodus, each of which is longer than the carpus and twice as long as the slender dactyl. Pereopod 2 (Fig. 40h) with basis broad at base, about $\frac{3}{4}$ as long as remaining segments together; carpus with a long distal spine, about twice as long as merus but distinctly shorter than the dactyl. Uropod (Fig. 40i) with peduncle long and slender, without serrations but a few setae on its inner edge, nearly as long as last four pleonites

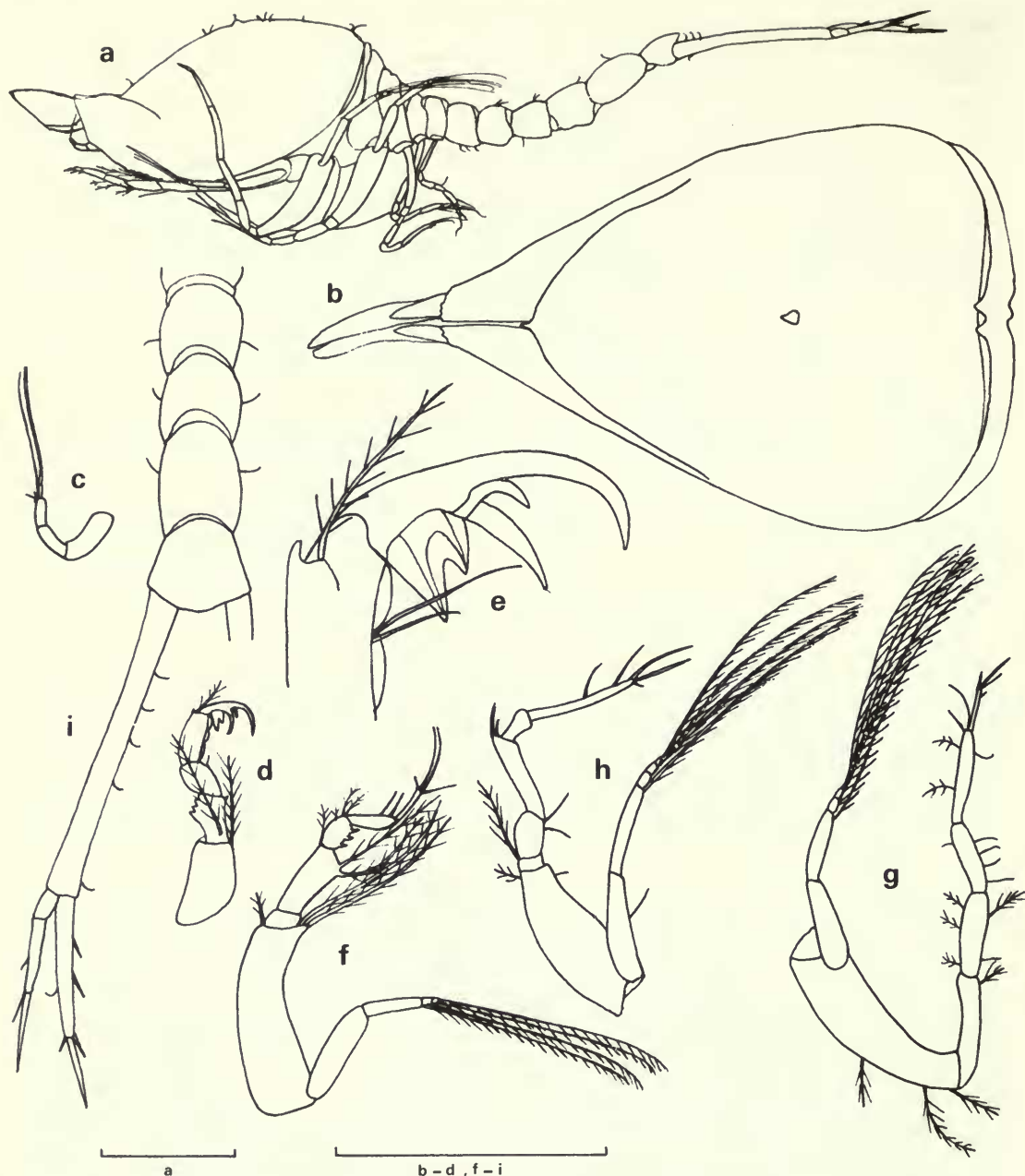


Fig. 40 *Procampylaspis ommidion* ovigerous ♀, (a) lateral view; (b) carapace from above; (c) antenna 1; (d) maxilliped 2; (e) distal part of maxilliped 2 (further enlarged); (f) maxilliped 3; (g) pereopod 1; (h) pereopod 2; (i) uropod and end of pleon.

together and more than twice as long as the endopod which has three slender spines on its inner edge and a strong terminal spine; the exopod is $\frac{3}{4}$ as long as the endopod.

Adult male with usual differences from female, without additional spines.

TYPE LOCALITY. 56° 44' N, 09° 28' W, 1632–1692 m. Type specimens deposited in the British Museum (Natural History). Holotype 1982 : 353 : 1, allotype 1982 : 354 : 1, paratypes 1982 : 355 : 10.

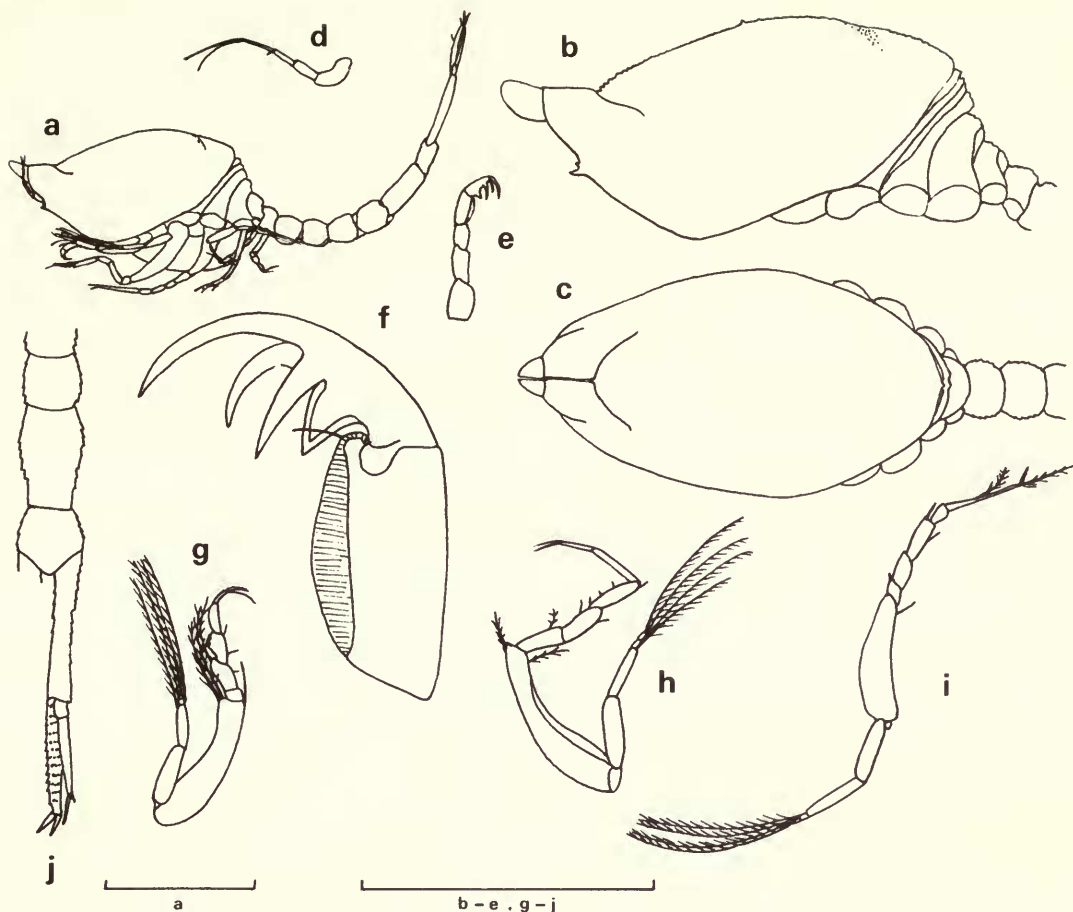


Fig. 41 *Procampylaspis profunda* ♀, (a) lateral view; (b) carapace and pereon from side; (c) carapace and pereon from above; (d) antenna 1; (e) maxilliped 2; (f) distal part of maxilliped 2 (further enlarged); (g) maxilliped 3; (h) pereopod 1; (i) pereopod 2; (j) uropod and end of pleon.

REMARKS. *P. ommidion* shows considerable resemblance to *P. bonnieri*, having similarly a reduced eyelobe, but the female has a low mid-dorsal tubercle on the carapace while the adult male has no additional spines on the carapace and pereon. The uropod peduncles are relatively longer than in *P. bonnieri* and there are some differences in the armature of the appendages.

DISTRIBUTION. Found in some quantity on both sides of the North Atlantic between 860 and 4749 m depth.

***Procampylaspis profunda* sp. nov.**
(Fig. 41)

MATERIAL. AII31-156: 5 ad. ♂♂, 17 ad. ♀♀, 16 imm. ♀♀, 1 juv. AII40-175: 1 ad. ♀, 2 imm. ♀♀. AII42-192: 2 ad. ♂♂, 26 ad. ♀♀. 194: 1 imm. ♂, 1 imm. ♀. 202: 2 juv.

DESCRIPTION. Adult female, length 3.0 mm: carapace (Fig. 41a-c) almost twice as long as deep or as broad; pseudorostrum less than $\frac{1}{2}$ of total carapace length, abruptly truncated in front; siphons fairly short; antero-lateral angle marked by a prominent spine; integument with minute reticulations; eyelobe minute; the whole body surface has a more or less scaly

appearance from the presence of small serrations or projections; there are no or only a few very short setae. The anterior pereon somites have the usual bifid dorsal lappets.

Antenna 1 (Fig. 41d) with basal segment sharply curved, shorter than second and third together. Maxilliped 2 (Fig. 41e, f) broadened, propodus with a continuous hyaline membrane on its inner edge, dactyl with basal spine not bifid and most distal spine distinctly longer than others. Maxilliped 3 (Fig. 41g) with basis distinctly longer than remaining segments together, carpus serrated along upper edge. Pereopod 1 (Fig. 41h) with basis about $\frac{3}{4}$ as long as remaining segments together, the next four segments about equal in length and $1\frac{1}{2}$ as long as the dactyl. Pereopod 2 (Fig. 41i) with basis about $\frac{2}{3}$ as long as remaining segments together, the ischium and carpus each with a terminal spine, the carpus not greatly longer than the merus. Uropod (Fig. 41j) with peduncle a little shorter than last two pleonites combined and little more than $1\frac{1}{4}$ as long as the endopod which is about $1\frac{1}{4}$ as long as the exopod.

The adult male shows the normal differences from the female and has no prominent spines on the carapace although the dorsum is somewhat serrated.

TYPE LOCALITY. $00^{\circ} 46' \text{ S}$ – $00^{\circ} 46.5' \text{ S}$, $29^{\circ} 28' \text{ W}$ – $29^{\circ} 24' \text{ W}$, 3459 m. Type specimens deposited in the British Museum (Natural History). Holotype 1982:356:1, allotype 1982:357:1, paratypes 1982:358:10.

REMARKS. This and the following species differ from most others in the genus by the armature of the dactyl of the second maxilliped, which has only three teeth apart from the terminal spine, resembling in this respect *P. tridentata*. Most other species have either four separate teeth or the proximal tooth is deeply cleft. *P. tridentata* has an elongate eyelobe.

DISTRIBUTION. Recorded at several stations off South-west Africa but also from single localities in the mid-Atlantic tropics and on the Gay Head–Bermuda transect, 1643–4693 m.

***Procampylaspis hirta* sp. nov.**

(Fig. 42)

MATERIAL. BIOGAS III-DS41: 8 ad. ♂♂, 5 imm. ♂♂, 19 ad. ♀♀.

DESCRIPTION. Adult female, length 3.7 mm: carapace (Fig. 42a–c) less than twice as long as deep and about $1\frac{1}{3}$ as broad, smooth but with many fairly long setae and a single mid-dorsal small pointed spine; integument with a hexagonal pattern which is not pronounced and tending to catenary; pseudorostrum less than $\frac{1}{6}$ of total carapace length, not truncate in front; siphons fairly short; eyelobe small, pointed; antero-lateral angle defined by a sharp spine followed by some serrations. Anterior pereon somites with usual bifid dorsal lobes and with some longish setae. Pleon without spines but with a few short setae and small lateral serrations.

Antenna 1 (Fig. 42d) with basal segment curved, fairly stout; second and third segments successively shorter and more slender. Maxilliped 2 (Fig. 42e, f) with basal spine of dactyl not bifid, most distal spine longer than others but projecting inwards only little beyond the second from the base. Maxilliped 3 (Fig. 42g) with basis a little longer than remaining segments combined, the upper distal end slightly produced; the merus little broadened, longer than the carpus, slightly serrated on its lower edge, as is the upper edge of the carpus. Pereopod 1 (Fig. 42h) with basis distinctly shorter than remaining segments together, with a sharp spine at its lower distal end; the ischium about as long as the propodus and longer than the carpus, which is longer than the merus. Pereopod 2 (Fig. 42i) with basis about $\frac{2}{3}$ as long as remaining segments together, the carpus with a strong distal spine, about as long as ischium and merus together but only about $\frac{2}{3}$ as long as the dactyl. Uropod peduncle (Fig. 42j) about as long as last two pleonites together and more than $1\frac{1}{2}$ as long as the endopod, serrated on its outer edge and with a somewhat scaly appearance; the endopod has about 7 spines on the inner edge and a longer terminal spine; it is not much longer than the exopod.

Adult male differs from the female in the usual respects.

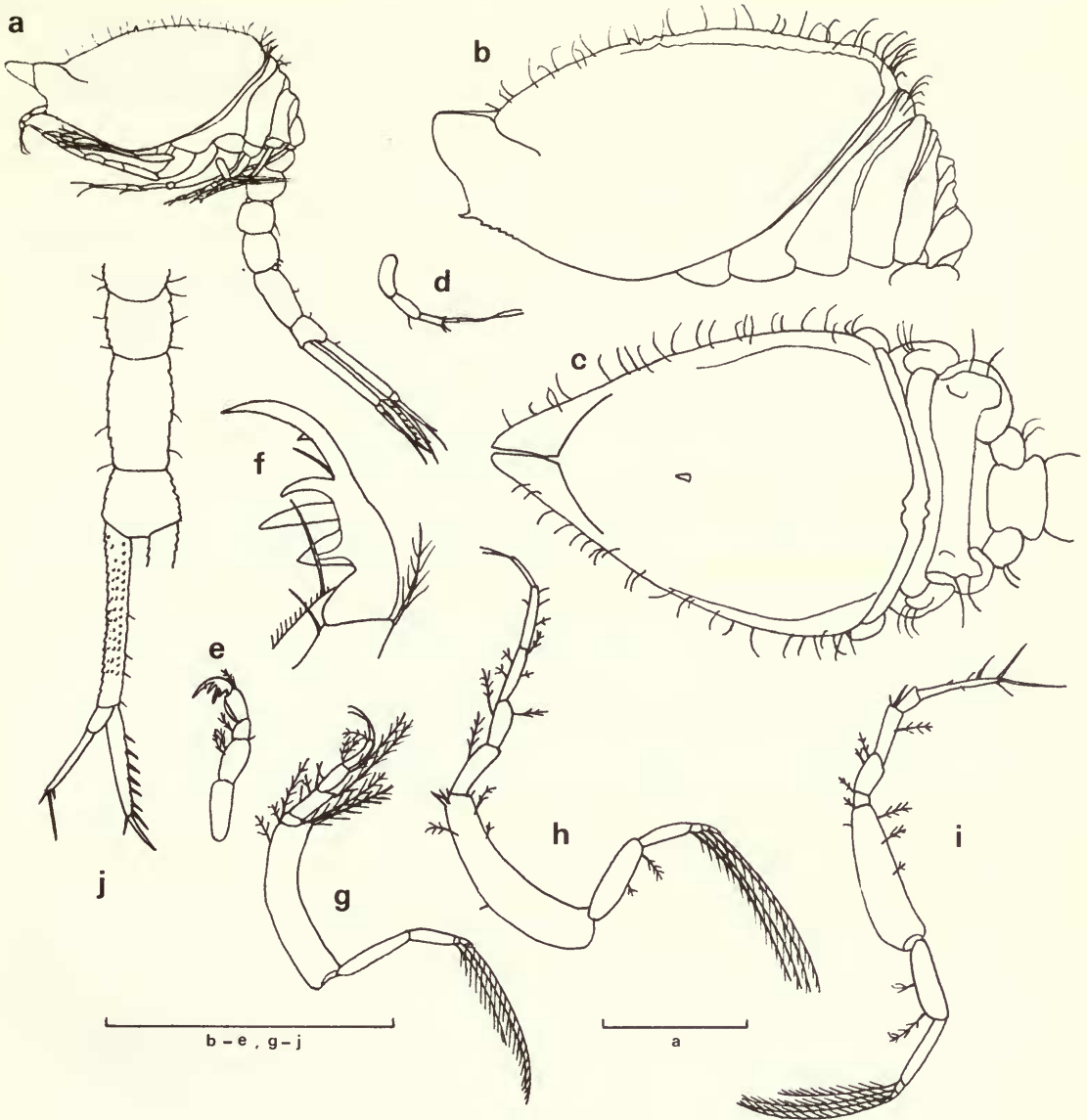


Fig. 42 *Procampylaspis hirta* ♀, (a) lateral view; (b) carapace and pereon from side; (c) carapace and pereon from above; (d) antenna 1; (e) maxilliped 2; (f) distal part of maxilliped 2 (further enlarged); (g) maxilliped 3; (h) pereopod 1; (i) pereopod 2; (j) uropod and end of pleon.

TYPE LOCALITY. 47° 28.3' N, 9° 07.2' W, 3548 m. Type specimens deposited in the Museum National d'Histoire Naturelle, Paris. Holotype ♀ no. Cu 216, allotype ♂ Cu 217, paratypes Cu 218.

REMARKS. *P. hirta* generally resembles *P. profunda* and has similarly a small rudimentary eyelobe but differs in having a small mid-dorsal spine and many fairly long setae on the carapace.

DISTRIBUTION. Numerous specimens were found at only a single station in the Bay of Biscay at a depth of 3548 m.

Key to the species of *Procampylaspis*

- 1 Carapace with many peculiar hooked setae *bacescoi* Reys & Soyer, 1966
- Carapace with setae when present normally hair-like 2
- 2 Eyelobe rudimentary, small and scarcely elongated (Figs 40-42) 3
- Eyelobe normally developed or distinctly elongated (Figs 35-39) 9
- 3 Maxilliped 2 with proximal tooth on dactyl undivided (Figs 41, 42) 4
- Maxilliped 2 with proximal dactylar tooth bifid (Fig. 40) 5
- 4 Carapace without setae (Fig. 41) *profunda* sp. nov. (p. 265)
- Carapace with many fairly long setae (Fig. 42) *hirta* sp. nov. (p. 266)
- 5 Distal dactylar tooth of maxilliped 2 long, about three times as long as the medial tooth *macronyx* Hansen, 1920
- Distal dactylar tooth of maxilliped 2 less than twice as long as medial tooth (Fig. 40e) 6
- 6 Basis of maxilliped 2 with many spiniform scales *maurini* Bacescu & Muradian, 1972
- Basis of maxilliped 2 without scales or projections (Fig. 40d) 7
- 7 Carapace, pereon and pleon beset with many long setae *arguini* Bacescu & Muradian, 1972
- Setae when present on the integument are few and short (Fig. 40a) 8
- 8 Uropod peduncles scarcely longer than last two pleon somites together *bonnieri* Calman, 1906
- Uropod peduncles distinctly longer than the last three pleon somites together (Fig. 40a) *ommidion* sp. nov. (p. 263)
- 9 Eyelobe with lenses distinguishable 10
- No lenses visible in eyelobe 11
- 10 Carapace with two tubercles, one on either side dorso-laterally *meridiana* Jones, 1971
- Carapace with a single mid-dorsal tubercle *thalassae* Bacescu & Muradian, 1972
- 11 Eyelobe not much elongated, at most little more than $\frac{1}{3}$ as long as pseudorostrum and devoid of spines (Fig. 35d) 12
- Eyelobe more elongated, distinctly more than $\frac{1}{3}$ as long as pseudorostrum and often with one or more spines (Figs 36b, 37b, 38b, 39b) 13
- 12 Carapace without spines or tubercles; eyelobe broad at base (Fig. 35a, b, d) *inermis* sp. nov. (p. 255)
- Carapace with a strong mid-dorsal tubercle; eyelobe narrow *unicornis* Gamô, 1977
- 13 Eyelobe with a double row of small teeth or serrations (Fig. 39c) *serratoculus* sp. nov. (p. 260)
- Eyelobe unarmed or ending in a single or double spine or with a single row of teeth (Figs 36b, d, 37b, c, 38b-d) 14
- 14 Eyelobe with two spines side by side at or near its end 15
- Eyelobe unarmed, ending in a single spine, or with a single row of serrations 17
- 15 Carapace with two dorso-lateral tubercles on either side, each bearing two blunt spines; no other spines are present *compressa* Zimmer, 1907
- Carapace with a single mid-dorsal spine or none but no dorso-lateral tubercles; some small spines may be present dorso-laterally and laterally at the hind end 16
- 16 Eyelobe extending almost to the end of the pseudorostrum; second maxilliped with four teeth on the inner margin of the dactyl *armata* Bonnier, 1896
- Eyelobe extending to little more than half way along pseudorostrum; second maxilliped with only three teeth on inner margin of dactyl *tridentata* Stebbing, 1912
- 17 Eyelobe distinctly less than half as long as pseudorostrum and ending in a short spine (Fig. 37c) *lutensis* sp. nov. (p. 258)
- Eyelobe at least almost half as long as pseudorostrum (Figs 36b, c, 38b-d) 18
- 18 Carapace with two dorso-lateral tubercles, one on either side, each bearing a spine *bituberculata* Hansen, 1920
- Carapace with one mid-dorsal spine or none or many scattered spines (Figs 36a, c, 38b, d) 19
- 19 Dactyl of second maxilliped has the two proximal teeth long and narrow and deeply separated, the more distal tooth much more than half as long as the proximal; merus of third maxilliped with an outstanding spine of its inner margin *sordida* Hale, 1945
- Dactyl of second maxilliped has the proximal tooth bifid, not deeply cleft, with more distal part less or little more than half as long as the proximal; merus of third maxilliped without spine (Figs 36g, h, 38g, h) 20

- 20 Carapace with a prominent mid-dorsal spine; dactyl of second maxilliped with distal tooth little longer than the medial (Fig. 36a, c, g) *procurrens* sp. nov. (p. 256)
- Carapace without spines (♀) or with many dorsally and on its hind part; dactyl of second maxilliped with distal tooth distinctly longer than medial (Fig. 38b, d, g) *acanthomma* sp. nov. (p. 260)

Genus *CAMPYLASPIDES* Fage, 1929

Resembling *Campylaspis*. Mandible with the molar process prominent, styliform. Second maxilla with one lobe on the basis provided with one or more setae. Second maxilliped with the dactyl in the form of a trident, articulated at the distal end of the propodus.

The peculiar shape of the second maxilliped, especially the three-pronged dactyl, is the chief feature distinguishing this genus from *Campylaspis*. There are now three species known, all from the deep Atlantic.

Campylaspides grandis Fage, 1929

MATERIAL. MBAUK-44: 1 imm. ♀. BIOGAS VI-DS86: 1 imm. ♀. CP23: 2 ad. ♀♀.

DISTRIBUTION. The original record was of a single female from off the Azores in 1482 m. It is now recorded from the Bay of Biscay between 1739 and 1980 m. The male remains unknown.

Campylaspides spinifera Jones, 1973

MATERIAL. AII31-167: 3 imm. ♂♂, 1 ad. ♀, 1 imm. ♀, 7 juv. Kn25-291: 1 juv. 293: 2 ad. ♂♂, 2 ad. ♀♀, 4 juv.

DISTRIBUTION. Two adult males were recorded from a station off the coast of tropical Brazil in 587 m. Further records are of both sexes from another station off Brazil in 943–1007 m and from two stations off Surinam in 1500 m and 3859–3868 m respectively.

Campylaspides canariensis sp. nov.

(Fig. 43)

MATERIAL. IOS-6696: 1 imm. ♂, 4 ad. ♀♀, 1 imm. ♀. 6697: 1 ad. ♂, 1 imm. ♀, 1 juv. 6701: 2 imm. ♂♂, 1 ad. ♀, 1 imm. ♀, 1 juv. 6704: 1 imm. ♀. 6711: 1 juv. BIOGAS IV-DS52: 1 imm. ♀.

DESCRIPTION. Adult female, length 4.9 mm: carapace (Fig. 43a) smooth with scattered long setae towards front, nearly $2\frac{1}{2}$ as long as deep, covering anterior pereon somites; pseudo-rostrum long and prominent, nearly $\frac{1}{4}$ of total carapace length; antennal notch well excavated with prominent antero-lateral angle below, defined by a spine; eyelobe rudimentary. Pereon and anterior pleon somites have hyaline dorso-lateral spines and a few short setae.

Antenna 1 (Fig. 43b) with basal segment slender, a little curved, not quite as long as second and third segments together; the second segment about $1\frac{1}{2}$ as long as the third. Maxilliped 2 (Fig. 43c) with ischium distinct, dactyl prolonged into three long spines about equal in length; the propodus with one long distal spine and a single spine on the carpus. Maxilliped 3 (Fig. 43d) with basis fairly stout, strongly curved, distinctly shorter than remaining segments together; the merus is longer than the carpus and neither is slender; the propodus is shorter than the carpus and more than twice as long as the dactyl. Pereopod 1 (Fig. 43e) with basis about $\frac{3}{4}$ as long as remaining segments together; the merus is expanded downwards distally and is shorter than the narrow carpus, which is about as long as the propodus and about $1\frac{1}{2}$ as long as the still more slender dactyl. Pereopod 2 (Fig. 43f) with basis less than $\frac{2}{3}$ as long as remaining segments together; the merus is about $\frac{1}{3}$ as long as the carpus, which is a little shorter than the slender tapering dactyl. Uropod (Fig. 43g) with peduncle unarmed except for a few short setae, distinctly longer than the last two pleonites together and nearly twice as long as the endopod. The endopod has two inner spines and a longer terminal spine and is about equal in length to the exopod.

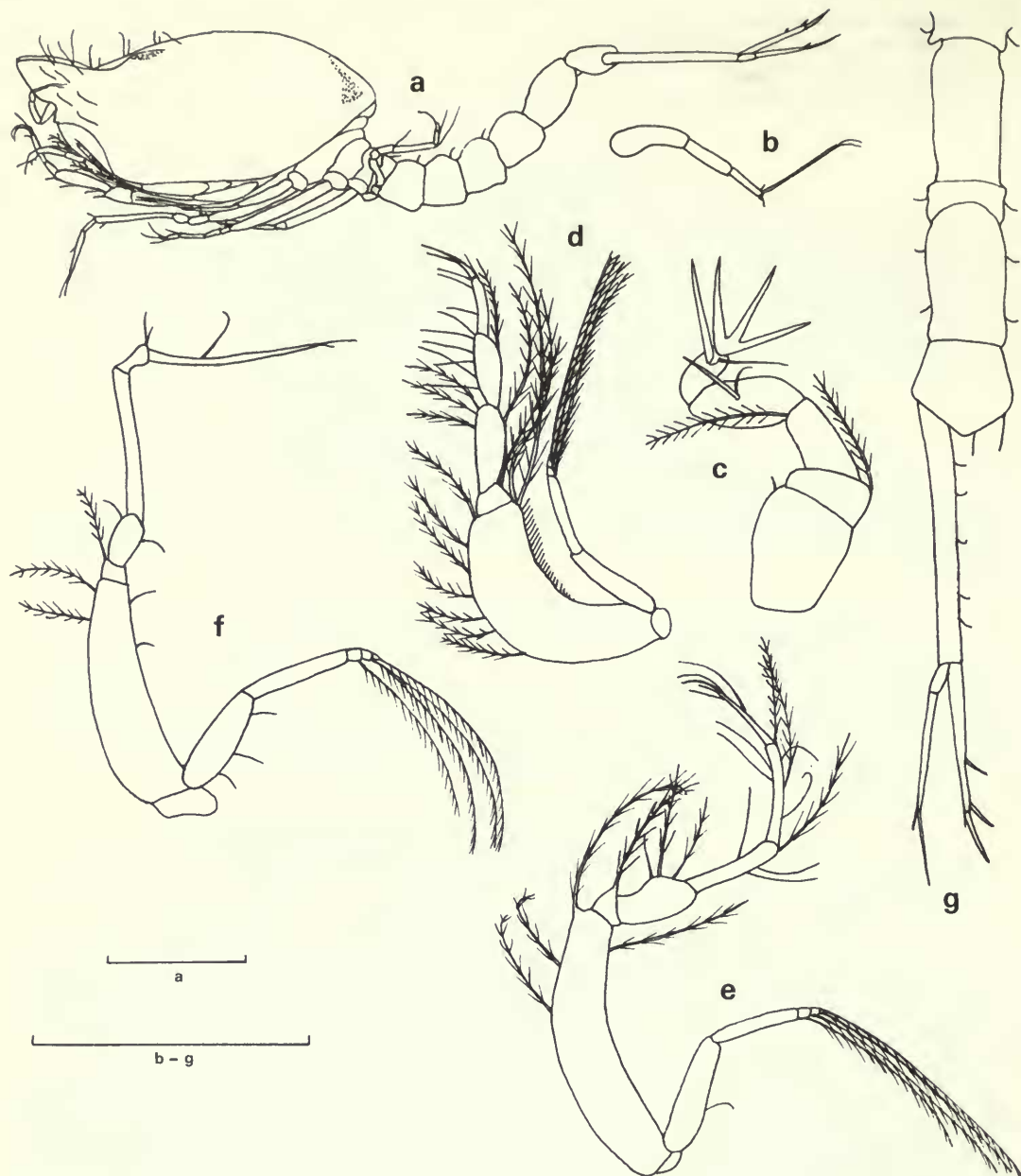


Fig. 43 *Campylaspides canariensis* ♀, (a) lateral view; (b) antenna 1; (c) maxilliped 2; (d) maxilliped 3; (e) pereopod 1; (f) pereopod 2; (g) uropod and end of pleon.

Adult male generally similar to female. The flagellum of the second antenna reaches at least beyond the hind end of the pereon. It is probably broken short in the only adult available.

TYPE LOCALITY. 28° 06' N, 13° 28' W, 1780 m. Type specimens deposited in the British Museum (Natural History). Holotype 1982:359:1, allotype 1982:360:1, paratypes 1982:361:2.

REMARKS. From *C. spinifera* this species is easily separated by the lack of carapace spinulation. Amongst other differences, the carpus of the third maxilliped is broad instead of narrow. *C. grandis* has several strong spines on the carpus of the second maxillipeds, not present in *C. canariensis*; there are many spines on the merus and carpus of the third maxillipeds in *C. grandis* which are lacking in *C. canariensis*; in the latter, the outer ramus of the uropod is almost as long as the inner instead of being much shorter and the inner ramus is more than half as long as the peduncle whereas in *C. grandis* it is much less than half as long.

DISTRIBUTION. Found at several stations off the Canary Islands and at one in the Bay of Biscay, between 1564 and 2988 m depth.

Genus *CAMPYLASPIS* G. O. Sars, 1865

Carapace strongly vaulted in the female, often bulging over the anterior pereon somites. Antero-lateral angles of the carapace not strongly produced. Eye unpaired and often rudimentary, seldom elongated. Mandible with the molar process styliform. The second maxilla reduced to a simple plate without movable endites. The first maxilliped reduced, with only three segments, the terminal very small. The second maxilliped with the propodus articulated at nearly a right-angle to the carpus and ending in a broad seta, the dactyl short and ending in two or more diverging spines. The first pereopod with the ischium not specially elongated.

Including the 5 new species described in this paper, there are now approximately 107 species in the genus.

Muradian (1979b) has divided the genus into two subgenera on the basis of the form of the second maxilla, which may have its distal edge broad and truncate or pointed. Each subgenus is again divided into several groups according to the shape and armature of the maxillipeds. A detailed study with comparative figures would be necessary before these proposals meet with general acceptance since the second maxillae and first maxillipeds have not been described in many species, but when this has been done it would no doubt provide excellent material for cluster analysis.

Campylaspis alba Hansen, 1920

MATERIAL. IOS-7709 # 72: 1 ad. ♂, 1 ad. ♀, 3 imm. ♀♀. 7709 # 73: 3 ad. ♂♂, 5 ad. ♀♀, 1 juv. 7709 # 85: 1 imm. ♀. SMBA-ES15: 1 imm. ♂, 5 imm. ♀♀, 1 juv. ES18: 1 imm. ♂, 1 imm. ♀, 1 juv. ES20: 2 ad. ♂♂, 6 imm. ♂♂, 1 ad. ♀, 1 imm. ♀. ES22: 2 imm. ♂♂, 1 imm. ♀, 1 juv. ES20: 2 ad. ♂♂, 6 imm. ♂♂, 1 ad. ♀, 1 imm. ♀. ES22: 2 imm. ♂♂, 1 imm. ♀, 2 juv. *Thalassa* 73-Z426: 1 imm. ♂. Z429: 2 ad. ♀♀, 2 imm. ♀♀. BIOGAS III-DS41: 5 ad. ♀♀. AII59-211: 1 ad. ♂, 7 ad. ♀♀. Ch106-313: 1 ad. ♀, 3 juv.

DISTRIBUTION. Further records (additional to those in Jones, 1974) include a station in the Mediterranean and range between 506 and 3548 m depth.

Campylaspis nitens Bonnier, 1896

MATERIAL. SMBA-ES4: 5 ad. ♂♂, 3 imm. ♂♂, 20 ad. ♂♂, 14 imm. ♀♀. ES6: 3 imm. ♂♂, 1 ad. ♀, 7 imm. ♀♀, 1 juv. ES10: 6 ad. ♂♂, 35 ad. ♀♀, 2 juv. ES12: 1 ad. ♂, 4 imm. ♂♂, 2 ad. ♀♀, 3 imm. ♀♀. ES18: 2 imm. ♂♂, 1 imm. ♀. ES20: 1 imm. ♂, 1 ad. ♀. BIOGAS I-DS09: 1 ad. ♂, 1 ad. ♀. POLYGAS-DS16: 1 ad. ♂, 2 ad. ♀♀. DS18: 1 imm. ♂. DS25: 3 ad. ♀♀. DS26: 1 ad. ♂, 1 imm. ♂, 6 ad. ♀♀. BIOGAS III-DS35: 1 imm. ♂. BIOGAS IV-DS51: 10 ad. ♂♂, 8 ad. ♀♀, 3 imm. ♀♀. DS52: 2 ad. ♀♀, 1 imm. ♀. BIOGAS VI-DS86: 2 ad. ♂♂, 1 imm. ♂, 3 ad. ♀♀. DS87: 1 ad. ♂, 1 imm. ♂, 2 ad. ♀♀. CP23: 1 imm. ♂, 1 imm. ♀. CP24: 1 ad. ♀. CP25: 1 imm. ♂, 1 juv.

DISTRIBUTION. Now recorded from many stations west of Scotland and in the Bay of Biscay between 1284 and 2900 m.

Campylaspis nuda Jones, 1974

MATERIAL. AII60-240: 2 ad. ♂♂, 4 ad. ♀♀, 2 imm. ♀♀, 1 juv. 264. 1 ad. ♀. Kn25-293: 1 ad. ♂, 2 imm. ♂♂, 10 ad. ♀♀, 2 imm. ♀♀. 297: 1 imm. ♀.

DISTRIBUTION. Originally recorded from off tropical Brazil, it has now been found off the Argentine and off Surinam between 500 and 2323 m depth. In some specimens, the carapace has a slight antero-dorsal prominence on either side.

Campylaspis paeneglabra Stebbing, 1912

MATERIAL. BIOGAS II-DS33: 4 ad. ♂♂, 4 imm. ♂♂, 8 imm. ♀♀, 2 juv. DS34: 1 ad. ♂.

DISTRIBUTION. Found at two stations in the Bay of Biscay between 1031 and 2338 m. The only other record was that of Stebbing off South Africa in 805 m.

Campylaspis mauritanica Bacescu and Muradian, 1972

MATERIAL. *Thalassa* 73-Z398: 1 ad. ♀.

DISTRIBUTION. The original record was from the Mauritanian coast in 270 m and it is now recorded from a single station in the Bay of Biscay in 330 m.

Campylaspis rubicunda (Lilljeborg, 1855)

MATERIAL. IOS-7709 # 72: 2 ad. ♀♀. SMBA-ES2: 1 imm. ♀. ES4: 1 juv. ES12: 1 imm. ♀. *Thalassa* 73-Z400: 1 ad. ♀. POLYGAS-DS15: 1 ad. ♀. DS16: 1 imm. ♂, 2 ad. ♀♀, 2 imm. ♀♀, 1 juv. BIOGAS IV-DS52: 1 imm. ♀. BIOGAS V-DS65: 3 imm. ♀♀. BIOGAS VI-CP23: 1 ad. ♀, 3 juv.

DISTRIBUTION. Further records of this species include several Biscay stations and extend down to 2857 m.

Campylaspis laevigata Jones, 1974

MATERIAL. *Thalassa* 70-W357: 3 imm. ♂♂, 3 imm. ♀♀, 1 juv. BIOGAS I-DS14: 2 imm. ♂♂, 2 imm. ♀♀. All60-236: 2 imm. ♂♂.

DISTRIBUTION. Originally recorded from off SW. Africa and from the Bay of Biscay, the additional stations are from off the Argentine coast and Biscay between 500 and 1560 m.

Campylaspis bonetti Bacescu and Muradian, 1972

MATERIAL. *Thalassa* 70-W357: 1 imm. ♂, 3 imm. ♀♀.

DISTRIBUTION. First recorded from the coast of Mauritania between 52 and 96 m depth, it has now been found in Biscay at 1000 m.

Campylaspis glabra Sars, 1879

MATERIAL. *Thalassa* 73-Z399: 1 ad. ♀, 1 imm. ♀. Z414: 1 ad. ♀, 5 imm. ♀♀. Z415: 1 ad. ♀. Z420: 1 imm. ♀. Z422: 1 imm. ♀. Z424: 1 ad. ♀, 2 juv. Z434: 2 juv. Z437: 1 ad. ♀. Z458: 2 ad. ♀♀. BIOGAS I-DS01: 1 imm. ♂. DS09: 1 ad. ♀. NORBI-CP11: 2 imm. ♂♂, 1 ad. ♀. All59-211: 7 ad. ♂♂, 6 imm. ♂♂, 68 ad. ♀♀, 10 imm. ♀♀, 4 juv.

DISTRIBUTION. Further records are within its previously known range both horizontal and vertical.

Campylaspis vitrea Calman, 1906

MATERIAL. *Thalassa* 70-W357: 1 imm. ♂, 1 imm. ♀, 3 juv. W371: 1 imm. ♂, 1 ad. ♀, 1 imm. ♀. *Thalassa* 72-Y374: 1 imm. ♀. *Thalassa* 73-Z426: 1 imm. ♀. All59-211: 1 ad. ♂, 2 imm. ♂♂. Kn25-293: 2 ad. ♂♂, 11 imm. ♂♂, 20 ad. ♀♀, 23 imm. ♀♀. 295: 1 imm. ♂, 1 imm. ♀, 1 juv. 297: 1 imm. ♂, 2 imm. ♀♀. 299: 2 imm. ♂♂, 4 ad. ♀♀, 1 imm. ♀, 1 juv.

DISTRIBUTION. Former records were from the Mediterranean and Biscay and also from between North Carolina and Florida (Muradian, 1976). Now recorded also from off Surinam and from depths between 500 and 2000 m.

Campylaspis macrophthalma Sars, 1879

MATERIAL. *Thalassa* 73-Z424: 1 ad. ♀, 1 juv. Z427: 1 imm. ♀. Z456: 1 imm. ♀. BIOGAS I-DS01: 1 ad. ♂. AII59-211: 37 ad. ♂♂, 120 ad. ♀♀, 22 imm. ♀♀.

DISTRIBUTION. As well as from the Mediterranean and Biscay, this species was also recorded from off Morocco by Bacescu and Muradian (1972*b*). I have examined specimens from the English Channel and the North Sea. The present records were from depths between 280 and 509 m, extending its known range downwards.

Campylaspis johnstoni Hale, 1937

MATERIAL. AII60-237: 1 mm. ♀, 1 juv. 239: 2 imm. ♂♂, 41 imm. ♀♀. 240: 1 ad. ♂, 9 imm. ♂♂, 22 ad. ♀♀, 29 imm. ♀♀, 34 juv. 242: 1 imm. ♀. 245: 29 imm. ♀♀, 27 juv. 262: 2 imm. ♀♀, 1 juv.

DISTRIBUTION. Earlier records were from the Antarctic in 193 m and Kerguelen (Ledoyer, 1977) and also from off the Argentine coast, 424–428 m (Muradian, 1976). The present records were from deeper water off Argentina between 1011 and 4402 m.

Campylaspis ovalis Stebbing, 1912

MATERIAL. Kn25-297: 1 imm. ♀.

DISTRIBUTION. Found originally off South Africa in 805 m, a single specimen from 500 m off the coast of Surinam is now attributed to this species.

Campylaspis sticta Jones, 1974

MATERIAL. AII60-240: 1 ad. ♂, 8 ad. ♀♀, 2 imm. ♀♀, 3 juv.

DISTRIBUTION. Formerly recorded from a station off SW. Africa, 1007–1014 m, a further 14 specimens were obtained off the Argentine coast, 2195–2323 m.

Campylaspis costata Sars, 1865

MATERIAL. IOS-7709 # 66: 1 ad. ♂. 7709 # 72: 1 ad. ♀. 7709 # 73: 1 ad. ♂, 2 ad. ♀♀. SMBA-ES4: 1 imm. ♀. ES6: 1 ad. ♀. ES129: 1 imm. ♂. POLYGAS-DS15: 1 imm. ♀. BIOGAS II-DS31: 2 ad. ♂♂, 4 imm. ♂♂, 4 ad. ♀♀, 5 imm. ♀♀, 8 juv. BIOGAS IV-DS51: 1 imm. ♂. BIOGAS VI-DS74: 1 imm. ♂. Kn25-303: 1 imm. ♂.

DISTRIBUTION. Previous records were from Norway to the British Isles, 23–478 m, and off NE. America down to 1470 m; it is now recorded from a station off Surinam and several west of Scotland and in Biscay at depths between 2000 and 2900 m.

Campylaspis scuta sp. nov.

(Fig. 44)

MATERIAL. Kn25-297: 2 ad. ♀♀.

DESCRIPTION. Adult female, length 3.7 mm: carapace (Fig. 44a, b) raised dorsally, about 1½ as long as deep and slightly less as broad, with a rounded prominence bearing a small spine on either side behind the frontal lobe and about four teeth on either side below these and extending farther back; there are also a few dorsal spines placed in pairs behind the frontal lobe; the integument is loosely reticulated and a number of prominent dark red chromatophores are visible; there are a few short setae dorsally; the pseudorostrum is less than 1/7 of the total carapace length, with the siphon projecting for about the same distance; the antennal notch is slightly excavated and the antero-lateral angle defined by a tooth with a diminishing series behind it; the eyelobe is moderately long, rounded in front and with sides nearly parallel. The pereon is smooth and without dorsal elevations. The pleon somites are serrated dorsally and laterally.

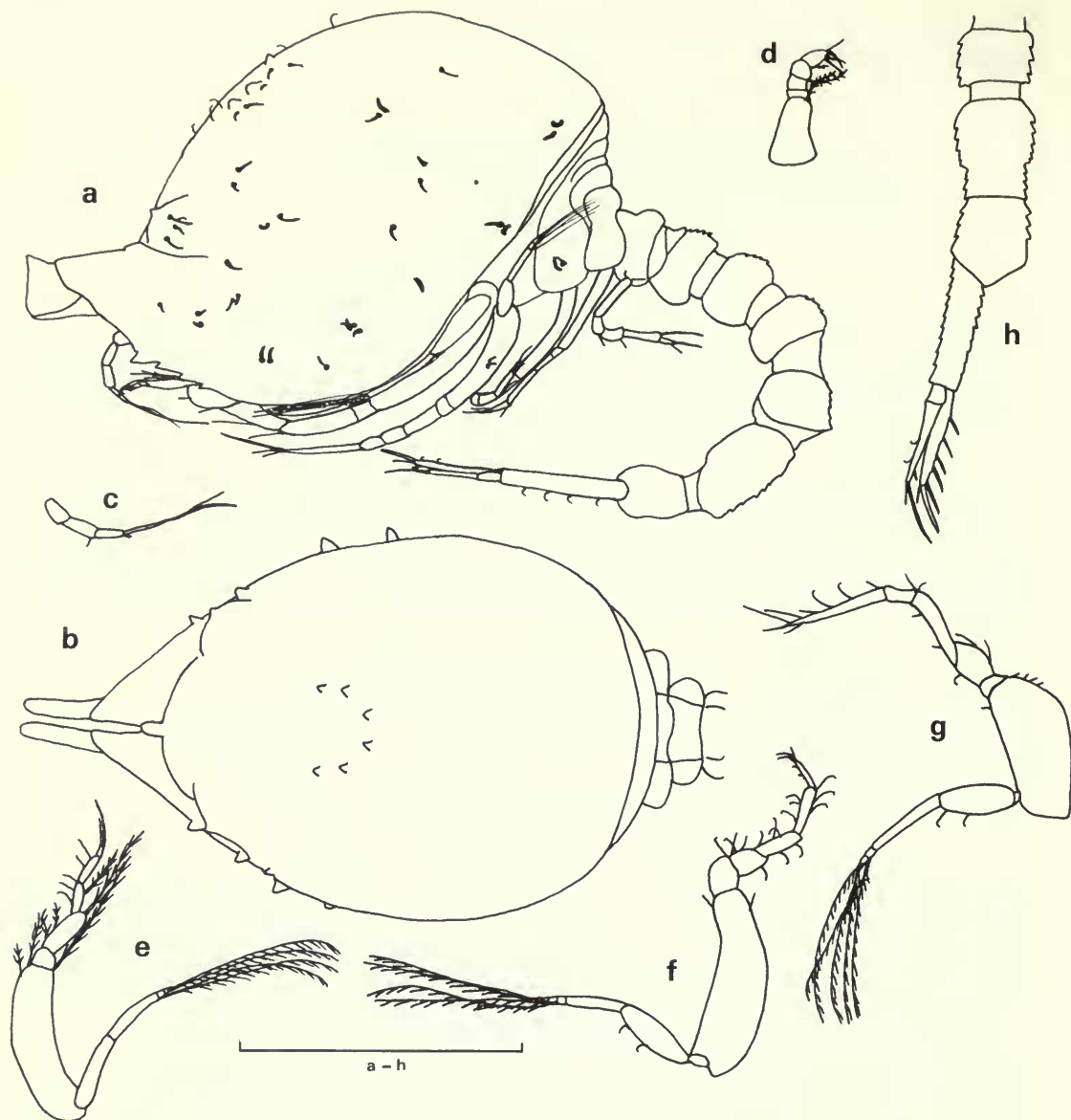


Fig. 44 *Campylaspis scuta* ♀, (a) lateral view; (b) carapace from side; (c) antenna 1; (d) maxilliped 2; (e) maxilliped 3; (f) pereopod 1; (g) pereopod 2; (h) uropod and end of pleon.

Antenna 1 (Fig. 44c) with basal segment of peduncle short and broad, shorter than the second and about as long as the third. Maxilliped 2 (Fig. 44d) with basal seta not specially thickened; dactyl with only two slender spines. Maxilliped 3 (Fig. 44e) with basis longer than remaining segments together, the merus unarmed and much longer than the carpus or propodus. Pereopod 1 (Fig. 44f) with basis about as long as remaining segments together, ischium and merus about equal in length and shorter than the subequal carpus and propodus. Pereopod 2 (Fig. 44g) with basis barely $\frac{2}{3}$ as long as remaining segments together, the ischium short, the merus broad and little more than half as long as the carpus which is about three times as long as the propodus and somewhat shorter than the gradually tapering dactyl. Uropod (Fig. 44h) with peduncle short, about $1\frac{1}{2}$ as long as last pleonite, serrated on both

edges, distinctly longer than the rami; the endopod with 5 slender spines on its inner edge and a longer terminal spine, about as long as the exopod.

Adult male unknown.

TYPE LOCALITY. 7° 45.3' N, 52° 24' W, 508–523 m. Type specimens deposited in the British Museum (Natural History). Holotype 1982 : 362 : 1, paratype 1982 : 363 : 1.

REMARKS. In the key in Jones (1974), *C. scuta* would run out near *C. affinis* Sars, but there are many obvious differences, notably in the second maxillipeds and uropods.

DISTRIBUTION. Two adult females were found at 500 m depth off the coast of Surinam.

Campylaspis spinosa Calman, 1906

MATERIAL. Kn25-293: 11 imm. ♂♂, 18 ad. ♀♀, 28 imm. ♀♀.

DISTRIBUTION. Earlier records were from the Mediterranean, off the Canaries, SW. Africa and tropical Brazil, 587–2924 m depth. It is now recorded also from off Surinam in 1500 m.

Campylaspis laticarpa Hansen, 1920

MATERIAL. *Thalassa* 73-Z430: 1 imm. ♀. Z459: 1 imm. ♂. BIOGAS VI-CP23: 1 imm. ♂.

DISTRIBUTION. Previously recorded by Hansen south-west of the Faroes between 810 and 942 m depth, it is now recorded from Biscay between 1080 and 1980 m.

Campylaspis pilosa Jones, 1974

MATERIAL. All60-239: 3 ad. ♀♀, 1 imm. ♀. Kn25-293: 2 ad. ♂♂, 4 ad. ♀♀, 1 imm. ♀. 297: 3 ad. ♂♂, 5 imm. ♂♂, 13 ad. ♀♀, 3 juv. 299: 4 imm. ♂♂, 5 ad. ♀♀, 7 imm. ♀♀, 1 juv.

DISTRIBUTION. First recorded from off tropical Brazil in 587 to 1007 m depth and now from off the Argentine and Surinam between 500 and 2000 m.

Campylaspis affinis Sars, 1870

MATERIAL. SMBA-ES27: 1 ad. ♂, 2 imm. ♂♂. ES56: 1 imm. ♂. ES59: 1 imm. ♂. ES118: 1 ad. ♂. ES129: 1 ad. ♂, 1 ad. ♀, 1 imm. ♀, 2 juv. ES135: 2 imm. ♂♂, 1 ad. ♀, 1 imm. ♀. ES137: 1 ad. ♂, 2 imm. ♂♂, 2 juv. ES140: 3 ad. ♀♀. ES147: 3 imm. ♂♂, 5 imm. ♀♀, 1 juv. BIOGAS IV-DS62: 1 imm. ♂. Ch106-321: 1 ad. ♀.

DISTRIBUTION. Described by Sars from off Norway, it is now recorded from west of Scotland and Biscay between 2175 and 2920 m.

Campylaspis quadriplicata Lomakina, 1968

MATERIAL. All60-240: 2 imm. ♀♀. 245: 4 imm. ♀♀.

DISTRIBUTION. Described from the Antarctic between 165 and 180 m depth and recorded by Muradian (1976) from off the Argentine and Chile in 470 to 1475 m, it is now recorded also from the Argentine in 2323 to 2707 m.

Campylaspis valida sp. nov.

(Fig. 45)

MATERIAL. Kn25-297: 2 ad. ♀♀.

DESCRIPTION. Adult female, length 7.2 mm: carapace (Fig. 45a-c) about $1\frac{1}{2}$ as long as high and nearly $1\frac{1}{2}$ as wide, overlapping the anterior pereon behind, with several pairs of dorso-lateral protuberances and hollows; on either side a ridge extends upwards and backwards from the antennal notch, being joined by another less well defined, running obliquely backwards from behind the frontal lobe, and dividing into two farther back, the upper branch running first upwards and then downwards to end towards the rear of the carapace and the

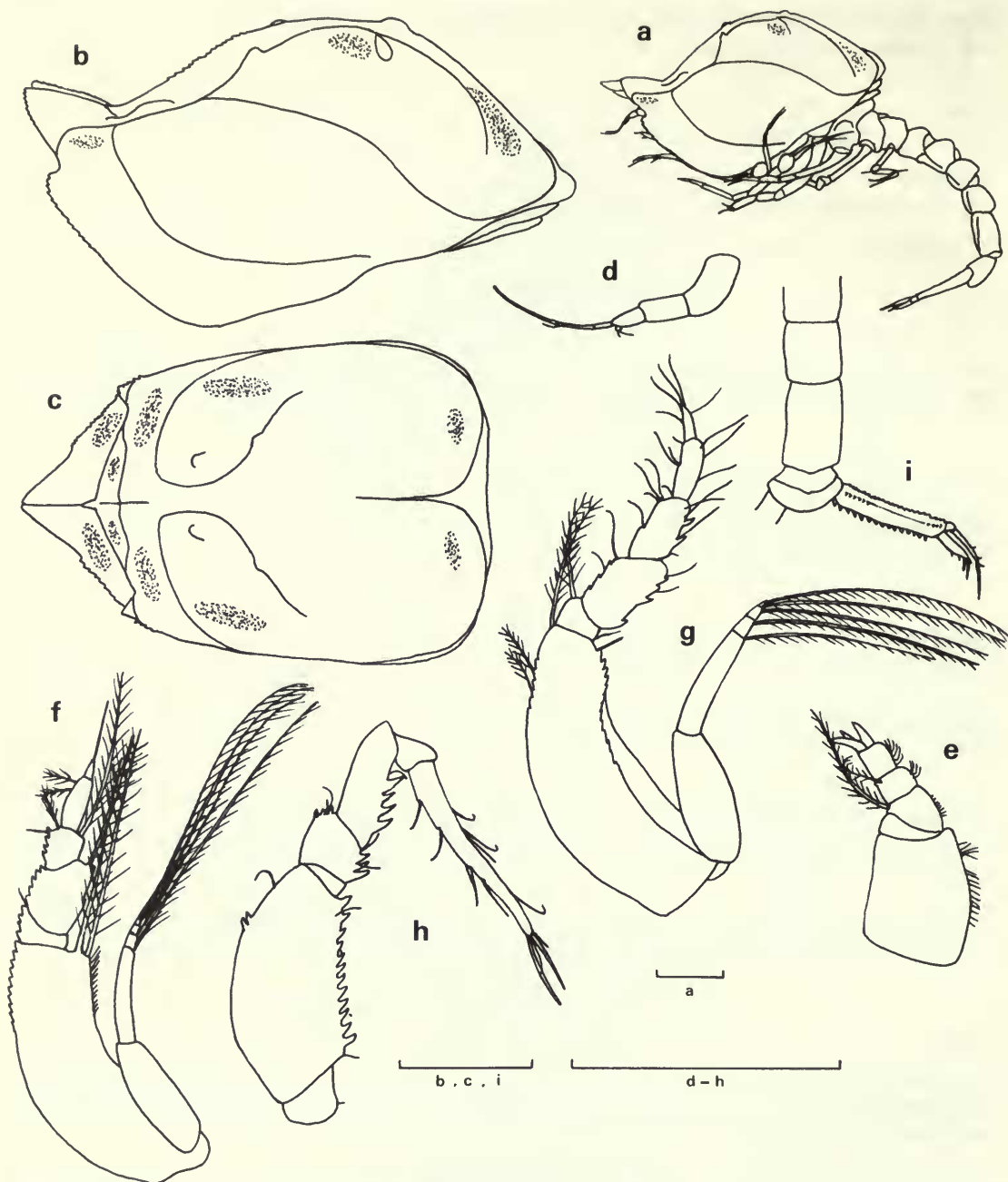


Fig. 45 *Campylaspis valida* ♀, (a) lateral view; (b) carapace from side; (c) carapace from above; (d) antenna 1; (e) maxilliped 2; (f) maxilliped 3; (g) pereopod 1; (h) pereopod 2; (i) uropod and end of pleon.

lower branch running downwards and then recurving upwards to meet its fellow mid-dorsally just in front of the hind end of the carapace; from the side the dorsum behind the frontal lobe appears serrated; the pseudorostrum is triangular, slightly raised dorsally, serrated below, siphons short; the antennal notch is well excavated and the antero-lateral angle prominent but rounded, with small serrations extending backwards; the eyelobe is rudimentary, narrow and pointed. The pereon and pleon somites are comparatively smooth.

Antenna 1 (Fig. 45d) with basal segment stout, slightly serrated below, the next two segments of the peduncle decreasing in length and thickness. Maxilliped 2 (Fig. 45e) with ischiobasis short and robust, without a thickened distal seta; the dactyl with two equal spines. Maxilliped 3 (Fig. 45f) with basis $1\frac{1}{2}$ as long as remaining segments together, serrated distally below, the merus broad and produced above; ischium, merus and carpus are serrated below; dactyl very short. Pereopod 1 (Fig. 45g) with basis stout, distally serrated above and below, distinctly longer than remaining segments together; the merus longer than the carpus and both segments with a few fairly large spines or serrations on their upper edges; propodus a little shorter than the carpus but nearly twice as long as the dactyl. Pereopod 2 (Fig. 45h) with basis stout, little more than half as long as remaining segments together; the carpus is about twice as long as the merus and less than $\frac{2}{3}$ as long as the slightly tapering dactyl; basis, merus and carpus each has a row of stout spines along its upper edge and there are two spines each on the lower edges of the basis and merus. Uropod (Fig. 45i) fairly short with peduncle strongly serrated on either side and dorsally towards its base, shorter than last two pleonites together; the endopod is little more than $\frac{1}{3}$ as long as the peduncle and shorter than the exopod.

Adult male unknown.

TYPE LOCALITY. $7^{\circ} 45.3' N$, $52^{\circ} 24' W$, 508–523 m. Type specimens deposited in the British Museum (Natural History). Holotype 1982 : 364 : 1, paratype 1982 : 365 : 1.

REMARKS. *C. valida* has some general resemblance to *C. bulbosa* Jones and would key out near to it in Jones (1974). However, there are many differences in carapace sculpturing and in the armature of the appendages.

DISTRIBUTION. Two adult females were found off Surinam in 500 m.

***Campylaspis selvakumarani* (Bacescu and Muradian, 1974) comb. nov.**

Floridocuma selvakumarani Bacescu & Muradian, 1974

Campylaspis paucispina Jones, 1974

MATERIAL. SMBA-ES4: 1 ad. ♂, 9 ad. ♀♀. ES12: 3 ad. ♂♂, 5 ad. ♀♀, 8 imm. ♀♀. ES15: 1 ad. ♀. ES18: 2 imm. ♀♀. ES20: 6 ad. ♀♀, 1 imm. ♀, 3 juv. BIOGAS I-DS13: 1 imm. ♀. POLYGAS-DS15: 1 ad. ♂, 4 ad. ♀♀, 2 imm. ♀♀. DS18: 1 ad. ♂, 1 ad. ♀, 4 imm. ♀♀. BIOGAS III-DS35: 1 imm. ♀. Ch106-313: 1 imm. ♂, 1 juv.

REMARKS. Bacescu and Muradian erected a new genus for this species on the grounds of the club-shaped distal seta on the basis of its second maxilliped, of which the propodus is said to have a different articulation against the carpus from *Campylaspis*. I am unable to find the rudimentary exopods on pereopods 3 and 4 described by Bacescu and Muradian and believe their specimen to have been an immature male. Since this shape of seta is now known to be shared with several other species of *Campylaspis*, which have no other special features in common, and the propodus does not seem to me to be unusual in shape, I am unable to accept *Floridocuma*.

The second antennal flagellum of the male is short and not long, as stated in error by Jones (1974).

DISTRIBUTION. Originally described from south of Cape Cod in 2085 m depth and also found in about the same locality between 1102 and 2496 m, it is now recorded within this depth range from west of Scotland and Biscay.

***Campylaspis gamoi* sp. nov.**

(Fig. 46)

MATERIAL. POLYGAS-DS16: 3 imm. ♀♀.

DESCRIPTION. Adult female, length 3.5 mm: carapace (Fig. 46a-c) about $1\frac{2}{3}$ as long as deep and $1\frac{1}{2}$ as broad, smooth except for a blunt prominence on either side of the frontal lobe

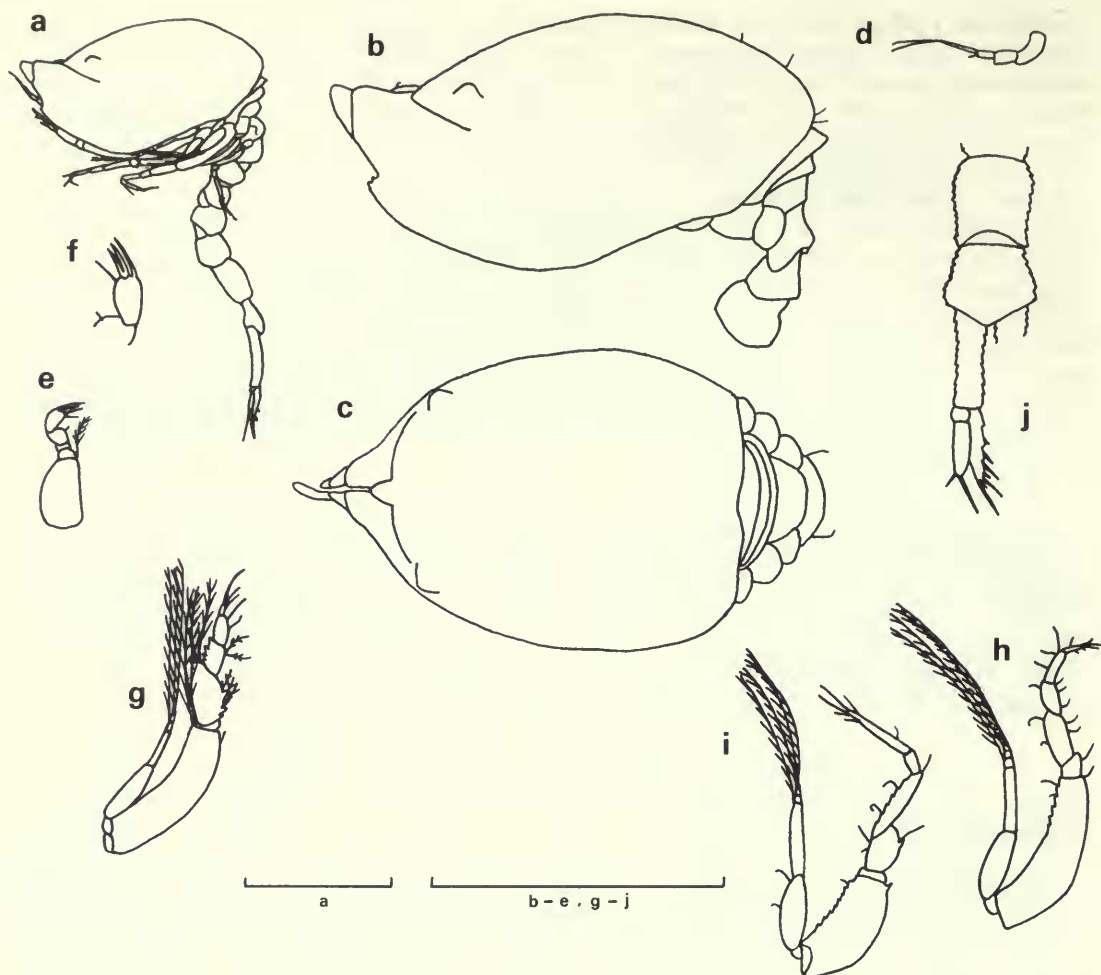


Fig. 46 *Campylaspis gamoi* ♀, (a) lateral view; (b) carapace and pereon from side; (c) carapace and pereon from above; (d) antenna 1; (e) maxilliped 2; (f) distal part of maxilliped 2 (further enlarged); (g) maxilliped 3; (h) pereopod 1; (i) pereopod 2; (j) uropod and end of pleon.

and a few short setae; the integument is hexagonally reticulated; the pseudorostrum is less than $\frac{1}{2}$ of the total carapace length, truncated in front, with a well excavated antennal notch below; the antero-lateral angle is distinct with a few slight serrations; siphons short; the eyelobe is fairly large and broad, rounded in front. The posterior pleon somites are serrated laterally.

Antenna 1 (Fig. 46d) with basal segment curved, not broad, nearly as long as second and third together. Maxilliped 2 (Fig. 46e, f) with ischiobasis broad at base; dactyl with two equal spines. Maxilliped 3 (Fig. 46g) with basis not widened, much longer than remaining segments together, merus fairly broad and with several short spines below and one distally above; carpus about half as long as merus and about as long as propodus, with several spines or serrations on its upper edge. Pereopod 1 (Fig. 46h) with basis very little longer than remaining segments together, with some serrations on its distal upper edge; the merus is more than twice as long as the ischium and about $1\frac{1}{2}$ as long as the subequal carpus or propodus. Pereopod 2 (Fig. 46i) with basis broad, little more than half as long as remaining segments together, serrated along its upper edge and with a spine on its lower edge distally; the merus

is broadened, with a spine on the lower edge; the carpus is almost twice as long as the merus, serrated along its upper edge, and about equal in length to the dactyl, which is little tapered. Uropods (Fig. 46j) short, peduncle little longer than last pleonite, serrated on either edge, barely $1\frac{1}{4}$ as long as the endopod, which is rather broad and scarcely longer than the exopod.

TYPE LOCALITY. 47° 36.1' N, 8° 40.5' W, 2325 m. Type specimens deposited in the Museum National d'Histoire Naturelle, Paris. Holotype ♀ no Cu 219, paratype Cu 220.

REMARKS. In carapace shape but in little else, *C. gamoi* resembles *C. pilosa*, having a single pair of blunt prominences at the sides of the frontal area. However, it is easily distinguished by the lack of setae on the carapace, the size of the eyelobe, the comparative shortness of the uropods and many details of the appendages.

DISTRIBUTION. Three immature females were found at a single station in Biscay, depth 2325 m.

Campylaspis undata Sars, 1865

MATERIAL. *Thalassa* 73-Z452: 1 juv. NORBI-CP11: 2 imm. ♂♂.

DISTRIBUTION. Recorded from the coast of Norway and south-west of the Faroes, 183–1185 m, it is now further recorded from Biscay in 1470 m.

Campylaspis sulcata Sars, 1870

MATERIAL. SMBA-ES23: 1 juv. *Thalassa* 73-Z400: 1 imm. ♀, 2 juv. Z413: 1 imm. ♂, 2 imm. ♀♀. Z414: 1 ad. ♂, 4 ad. ♀♀. Z416: 3 ad. ♂♂, 1 imm. ♂, 2 ad. ♀♀, 1 imm. ♀. Z417: 1 imm. ♂, 3 ad. ♀♀, 3 imm. ♀♀. Z420: 1 ad. ♂, 1 ad. ♀. Z421: 1 imm. ♂, 1 ad. ♀, 1 imm. ♀. Z424: 3 juv. Z425: 2 ad. ♂♂, 1 ad. ♀. Z426: 1 ad. ♀, 1 juv. Z427: 1 ad. ♂, 2 ad. ♀♀. Z431: 1 imm. ♀. Z435: 1 ad. ♀, 1 imm. ♀. Z441: 1 juv. Z456: 1 ad. ♀. Z458: 2 imm. ♂♂, 3 imm. ♀♀. NORBI-CP11: 2 imm. ♀♀. All59-211: 3 imm. ♀♀.

DISTRIBUTION. Previous records were from Norway, west of Ireland and the Mediterranean in about 130 to 650 m depth; it is now recorded also from Biscay down to 1400 m.

Campylaspis vallecullata Jones, 1974

MATERIAL. IOS-7709 # 66: 1 juv. 7709 # 73: 1 ad. ♂, 1 ad. ♀, 1 juv. 7709 # 85: 4 imm. ♀♀. SMBA-ES4: 1 imm. ♂, 1 imm. ♀, 1 juv. ES12: 1 imm. ♂, 3 juv. ES56: 1 ad. ♀. ES59: 1 imm. ♂. ES137: 1 ad. ♀. ES140: 1 imm. ♀. ES147: 1 juv. BIOGAS I-DS09: 1 ad. ♀, 1 imm. ♀. POLYGAS-DS15: 1 ad. ♀. DS16: 1 ad. ♀. BIOGAS II-DS31: 1 imm. ♂, 3 juv. DS32: 1 ad. ♀. BIOGAS III-DS41: 3 ad. ♀♀. BIOGAS IV-DS51: 1 imm. ♀. BIOGAS VI-DS74: 1 ad. ♀. All60-243: 1 imm. ♂, 1 juv. 246: 5 imm. ♂♂, 8 ad. ♀♀, 22 imm. ♀♀, 50 juv. 256: 2 ad. ♂♂, 3 ad. ♀♀, 1 juv. 259: 1 ad. ♂, 14 imm. ♂♂, 33 ad. ♀♀, 60 imm. ♀♀, 49 juv. 262: 2 ad. ♂♂, 4 ad. ♀♀, 8 imm. ♀♀. 264: 2 imm. ♂♂, 7 juv. Kn25-293: 1 imm. ♂, 1 ad. ♀, 1 juv. 301: 1 ad. ♂, 13 imm. ♂♂, 2 ad. ♀♀, 15 imm. ♀♀. Ch106-323: 1 ad. ♀.

DISTRIBUTION. Described from the Gay Head–Bermuda transect, between 1102 and 3806 m depth, this species is now also recorded from west of Ireland and in Biscay and also from the coasts of Surinam and the Argentine, down to 3917 m.

Campylaspis bacescui Muradian, 1976

MATERIAL. All60-237: 1 ad. ♀. 239: 1 ad. ♂, 2 ad. ♀♀.

DISTRIBUTION. Recorded by Muradian from off the Argentine, the Falkland Islands and the Straits of Magellan between 82 and 361 m depths, it has now been found off the Argentine coast in greater depths of 1011 to 1679 m.

Campylaspis exarata Jones, 1974

MATERIAL. All60-245: 9 ad. ♂♂, 17 imm. ♂♂, 65 ad. ♀♀, 7 imm. ♀♀.

DISTRIBUTION. Described from off the coast of tropical Brazil in 587 m depth, it is here recorded from off the Argentine in 2707 m.

Campylaspis mansa Jones, 1974

MATERIAL. IOS-7709 # 72: 3 ad. ♂♂, 1 imm. ♀. 7709 # 73: 2 imm. ♂♂, 5 ad. ♀♀, 2 imm. ♀♀. SMBA-ES4: 7 ad. ♀♀, 1 imm. ♀. ES10: 1 ad. ♂, 3 imm. ♂♂, 1 ad. ♀. ES12: 1 ad. ♂, 5 ad. ♀♀, 7 imm. ♀♀. ES18: 2 imm. ♂♂, 1 imm. ♀. ES27: 1 imm. ♀. ES135: 1 imm. ♀. ES137: 4 imm. ♀♀. ES140: 1 imm. ♀. ES147: 1 imm. ♂, 1 ad. ♀, 7 imm. ♀♀. *Thalassa* 73-Z429: 1 juv. Z442: 1 imm. ♂, 1 ad. ♀, 2 juv. Z447: 2 juv. Z453: 1 imm. ♀. Z459: 1 ad. ♀, 1 imm. ♀, 3 juv. POLYGAS-DS16: 1 imm. ♀. DS20: 1 ad. ♂, 2 ad. ♀♀, 1 juv. DS21: 1 imm. ♂, 1 imm. ♀, 2 juv. DS22: 1 ad. ♂. BIOGAS II-DS31: 2 ad. ♂♂, 6 imm. ♂♂, 7 ad. ♀♀, 3 imm. ♀♀. BIOGAS V-DS66: 3 ad. ♀♀, 6 imm. ♀♀, 1 juv. DS67: 1 ad. ♂, 4 ad. ♀♀, 2 imm. ♀♀. BIOGAS VI-DS76: 1 imm. ♂, 2 imm. ♀♀. DS78: 1 imm. ♂. DS79: 1 imm. ♂, 1 imm. ♀. DS86: 1 ad. ♀. CP23: 1 imm. ♂, 1 ad. ♀, 5 imm. ♀♀. Ch88-209: 1 imm. ♀. Ch106-321: 2 imm. ♀♀. Kn35-340: 1 imm. ♂, 1 imm. ♀, 1 juv.

DISTRIBUTION. Many were found originally on the Gay Head-Bermuda transect between 1135 and 2886 m depth. It is now also recorded from West of Scotland and from Biscay between 975 and 4715 m.

Campylaspis bicarinata Jones, 1974

MATERIAL. BIOGAS III-DS41: 1 ad. ♂, 3 imm. ♂♂, 8 ad. ♀♀, 3 imm. ♀♀. BIOGAS IV-DS55: 2 imm. ♂♂, 2 ad. ♀♀, 2 imm. ♀♀. BIOGAS VI-DS74: 4 imm. ♀♀. All60-237: 1 ad. ♂, 4 ad. ♀♀. 239: 1 ad. ♂. 243: 1 imm. ♂. 245: 3 ad. ♂♂. 246: 1 ad. ♂. 256: 1 ad. ♂, 3 imm. ♂♂, 1 imm. ♀. Kn25-287: 9 imm. ♂♂, 3 ad. ♀♀, 2 juv. 288: 1 imm. ♀. 291: 1 imm. ♂, 2 juv. 299: 2 imm. ♂♂, 3 imm. ♀♀, 2 juv. 303: 2 ad. ♀♀. Ch106-321: 3 imm. ♂♂, 3 ad. ♀♀, 2 imm. ♀♀, 1 juv. 323: 2 ad. ♂♂, 1 ad. ♀, 1 imm. ♀. 326: 5 imm. ♂♂, 6 ad. ♀♀, 10 imm. ♀♀, 2 juv. 328: 2 imm. ♂♂, 1 imm. ♀, 3 juv.

DISTRIBUTION. Previously recorded from the Gay Head-Bermuda transect and from off tropical Brazil, between 834 and 4680 m, it has now also been found off the Argentine and Surinam and from west of Ireland and Biscay on the eastern side of the North Atlantic down to 5000 m.

Campylaspis propinqua sp. nov.

(Fig. 47)

MATERIAL. Kn25-301: 3 imm. ♂♂, 3 imm. ♀♀.

DESCRIPTION. Immature female, length 4.0 mm: carapace (Fig. 47a, b) about $1\frac{1}{2}$ as long as broad; there is a blunt prominence on either side below the frontal lobe and three pairs of lateral ridges; the upper two ridges on either side run from the antero-lateral angle obliquely upwards to meet dorso-laterally near the hind end of the carapace, forming the boundaries of a depressed area; the third ridge is short and runs parallel to the hind border of the carapace; the pseudorostrum is about $\frac{1}{6}$ of the total carapace length, the lobes gently curved from their meeting point in front, the antero-lateral angle only slightly prominent; the eyelobe is fairly small but broad at the base. Pereon and pleon somites are without spines or serrations.

Antenna 1 (Fig. 47c) with basal segment curved, narrow, little longer than the second segment of the peduncle. Maxilliped 2 (Fig. 47d) with basis fairly broad, carpus broad and propodus long, dactyl with three nearly equal spines much shorter than that of the propodus. Maxilliped 3 (Fig. 47e) with basis broad, its lower distal edge somewhat produced, much shorter than the remaining segments together; the merus widened distally and about as long as the carpus and propodus together. Pereopod 1 (Fig. 47f) with basis broad at its base, a little shorter than the remaining segments together; merus to dactyl successively decreasing a little in length, without spines or serrations. Pereopod 2 (Fig. 47g) with basis about $\frac{3}{4}$ as long as remaining segments together, the carpus about $1\frac{1}{2}$ as long as the merus but only $\frac{3}{4}$ as long as the dactyl, which is tapered but not distally pointed. Uropods (Fig. 47h) with peduncle nearly as long as last three pleonites together, with hyaline serrations on either edge, twice as long as the endopod, which is distinctly longer than the exopod; the endopod has about 5 slender spines on its inner edge and a longer terminal spine.

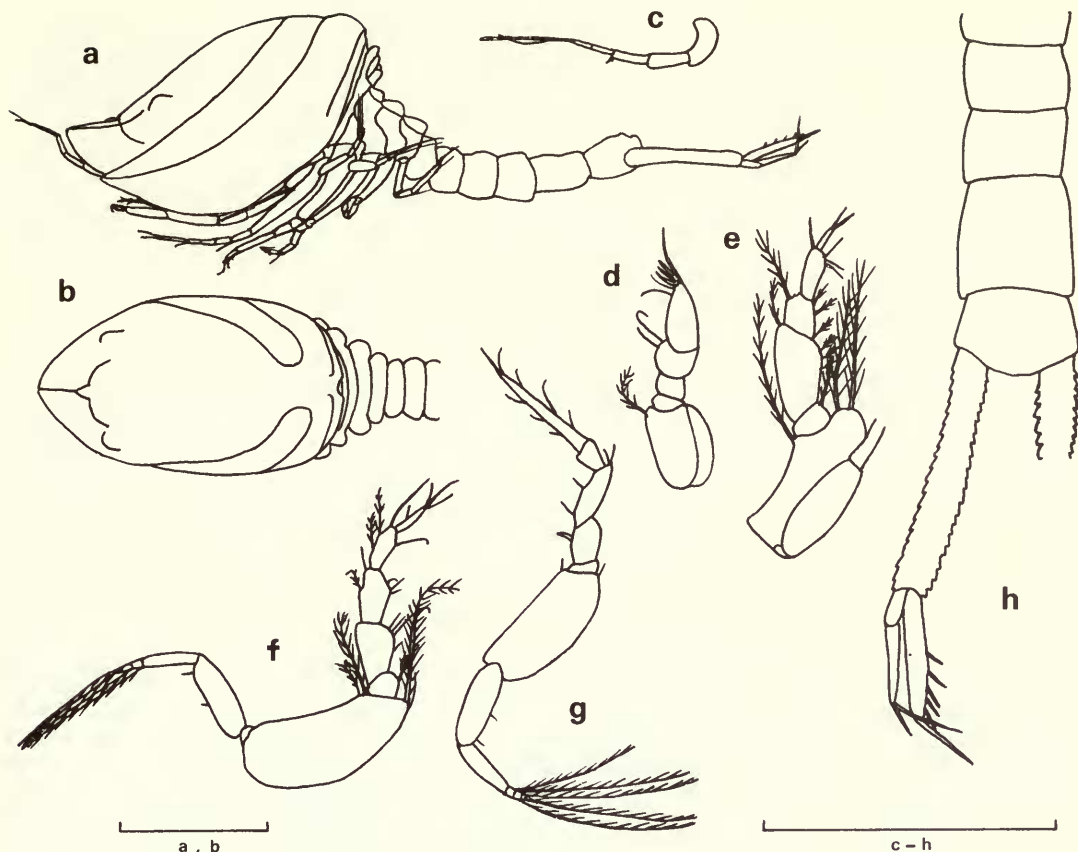


Fig. 47 *Campylaspis propinqua* ♀, (a) lateral view; (b) carapace and pereon from above; (c) antenna 1; (d) maxilliped 2; (e) maxilliped 3; (f) pereopod 1; (g) pereopod 2; (h) uropod and end of pleon.

TYPE LOCALITY. 8° 12.4' N, 55° 50.2' W, 2487–2500 m. Type specimens deposited in the British Museum (Natural History). Holotype 1982 : 366 : 1, paratypes 1982 : 367 : 2.

REMARKS. *C. propinqua* resembles *C. bicarinata* but differs in having a third, but short, carina on either side of the carapace, while the two longer carinae meet on either side dorso-laterally to enclose a shallow furrow. The uropods are comparatively shorter and stouter than in *C. bicarinata*, the three dactylar spines of the second maxillipeds are about equal in length, and the bases of the third maxillipeds and first and second pereopods are comparatively short.

DISTRIBUTION. Three immature males and three females were found at a single station off Surinam in 2500 m depth.

Campylaspis rostrata Calman, 1905

MATERIAL. SMBA-SBC67: 1 imm. ♀. *Thalassa* 70-W371: 1 imm. ♀. *Thalassa* 73-Z417: 1 imm. ♀. Z420: 1 imm. ♀. Z428: 1 juv. Z429: 1 juv. Z434: 1 juv. Z439: 1 ad. ♀, 1 imm. ♀. Z442: 1 imm. ♀. Z449: 1 imm. ♀, 1 juv. Z450: 1 juv. BIOGAS II-DS33: 1 imm. ♀. AII59-211: 1 imm. ♀.

DISTRIBUTION. Previous records were from west of Ireland, south-west of the Faroes, the Mediterranean and Biscay, between 220 and 1336 m depth. The further finds recorded here were from west of Scotland, Biscay and the Mediterranean down to 2338 m.

Campylaspis intermedia Hansen, 1920

MATERIAL. POLYGAS-DS26: 1 imm. ♂, 2 imm. ♀♀. BIOGAS III-DS50: 1 imm. ♂, 1 imm. ♀. BIOGAS IV-DS52: 2 ad. ♂♂, 2 imm. ♂♂, 1 ad. ♀, 6 imm. ♀♀, 30 juv. BIOGAS VI-DS86: 1 ad. ♀. DS87: 1 ad. ♀. CP23: 8 imm. ♂♂, 3 ad. ♀♀, 8 imm. ♀♀, 30 juv. CP24: 2 juv. Ch88-207: 2 imm. ♂♂, 8 ad. ♀♀, 6 imm. ♀♀, 12 juv. 209: 1 imm. ♂. Kn35-346: 2 ad. ♂♂, 7 imm. ♂♂, 28 ad. ♀♀, 35 imm. ♀♀, 257 juv.

DISTRIBUTION. First recorded by Hansen from the Davis Strait and south of Jan Mayen, it was later found on the Gay Head-Bermuda transect between 467 and 2178 m depth and also recorded by Muradian-Çiamician (1980) off Beaufort, N.C., from 344 and 692 m. It has now been collected also in Biscay within its previously known depth range.

Campylaspis horrida Sars, 1870

MATERIAL. NORBI-CP11: 1 imm. ♂, 3 ad. ♀♀, 1 imm. ♀, 1 juv.

DISTRIBUTION. Described from the coast of Norway, it was later found south of Iceland and south-west of the Faroes between about 183 and 942 m depth, other records being dubious. The station at which the present record occurred was also from the Norwegian Sea at 300 m and the species seems to be a genuine boreal inhabitant of the upper slope.

Campylaspis tumulifera sp. nov.

(Fig. 48)

MATERIAL. Ch88-207: 3 imm. ♂♂, 3 ad. ♀♀, 1 juv.

DESCRIPTION. Adult female, length 3.9 mm: carapace (Fig. 48a-c) about $1\frac{1}{2}$ as long as deep and $1\frac{1}{4}$ as broad, broadest near the hind end and narrowing in front; the upper half with a number of paired rounded tubercles, several of these forming a short ridge posteriorly on either side; there are shallow excavations behind these ridges and near the antero-lateral angles; most of the body has scattered dark red chromatophores visible through the epidermis; the pseudorostrum is short, about $\frac{1}{8}$ of the total carapace length, obliquely truncated from the side, siphons fairly long; antero-lateral angle well defined and sharp but not prominent, with faint serrations behind it; eyelobe large, sides almost parallel but rounded at front. Anterior pereon somites somewhat raised dorsally. Pereon and pleon without spines and not laterally serrated except faintly on pleonite 5.

Antenna 1 (Fig. 48d) with basal segment broad, nearly as long as subequal second and third together. Maxilliped 2 (Fig. 48e) with basis broadened distally, with a distally thickened seta; the dactyl has three spines, the median small. Maxilliped 3 (Fig. 48f) with basis curved, not narrowed, slightly longer than the remaining segments together, the merus not very broad, none of the segments with spines or serrations. Pereopod 1 (Fig. 48g) with basis somewhat longer than remaining segments together, without serrations. Pereopod 2 (Fig. 48h) with basis broad, not much more than half as long as remaining segments together, the dactyl about $1\frac{1}{2}$ as long as the carpus, slightly tapering. Uropod (Fig. 48i) peduncle with only faint serrations on its basal outer edge, much shorter than last two pleonites together, about $1\frac{1}{2}$ as long as the endopod which has 6 slender spines on its inner edge and a longer terminal spine; it is distinctly longer than the exopod.

TYPE LOCALITY. 39° 51.3' N-39° 51' N, 70° 54.3' W-70° 56.4' W, 805-811 m. Type specimens deposited in the British Museum (Natural History). Holotype 1982 : 368 : 1, paratypes 1982 : 369 : 3.

REMARKS. This species is similar to *C. paucinodosa* Jones, 1974 and was found in the general area. However, there are several important differences, especially the shape of the basal seta of maxilliped 2, which in *C. paucinodosa* is not thickened, and the relative lengths of the dactyl of pereopod 2, which is shorter than the carpus in *C. paucinodosa*.

DISTRIBUTION. A few specimens of both sexes but including only immature males occurred at a single station south of Gay Head in 805-811 m depth.

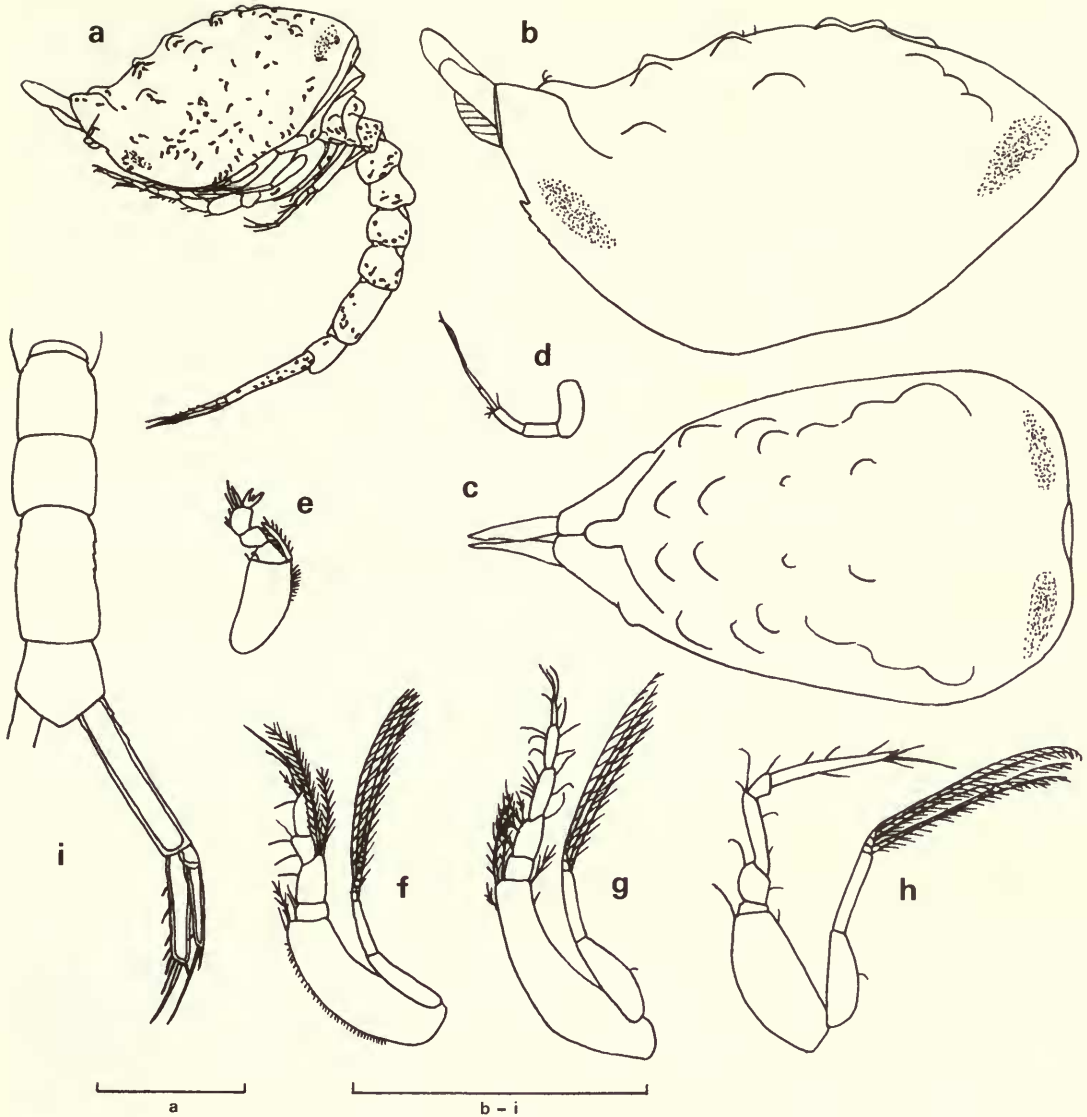


Fig. 48 *Campylaspis tumulifera* ♀, (a) lateral view; (b) carapace from side; (c) carapace from above; (d) antenna 1; (e) maxilliped 2; (f) maxilliped 3; (g) pereopod 1; (h) pereopod 2, (i) uropod and end of pleon.

***Campylaspis squamifera* Fage, 1929**

Campylaspis torulosa Jones, 1974.

MATERIAL. SMBA-ES18: 9 imm. ♂♂, 2 ad. ♀♀, 7 imm. ♀♀. ES20: 6 ad. ♀♀, 7 imm. ♀♀. *Thalassa* 73-Z429: 1 juv. Z443: 1 ad. ♀, 1 imm. ♀. BIOGAS I-DS05: 1 ad. ♀, 1 imm. ♀. DS09: 1 ad. ♂, 14 ad. ♀♀, 2 imm. ♀♀. DS11: 1 ad. ♀. DS12: 1 imm. ♀. DS13: 1 imm. ♂, 17 ad. ♀♀, 2 juv. POLYGAS-DS15: 4 imm. ♂♂, 5 ad. ♀♀, 8 imm. ♀♀, 19 juv. DS16: 1 imm. ♀, 10 juv. DS17: 2 ad. ♀♀, 2 imm. ♀♀, 4 juv. DS18: 6 imm. ♂♂, 25 ad. ♀♀, 34 imm. ♀♀. DS20: 1 imm. ♂. DS21: 1 imm. ♀. BIOGAS III-DS35: 6 ad. ♀♀, 2 imm. ♀♀, 3 juv. DS36: 2 imm. ♀♀. DS38: 3 ad. ♀♀, 2 imm. ♀♀. BIOGAS IV-DS62: 3 imm. ♂♂, 4 imm. ♀♀. DS63: 3 imm. ♀♀. DS64: 1 imm. ♂. BIOGAS V-DS65: 2 imm. ♀♀. DS67: 1 imm. ♂. BIOGAS VI-DS76: 2 imm. ♂♂, 2 imm. ♀♀. CP09: 3 mm. ♀♀. Ch106-326: 4 imm. ♂♂, 7 ad. ♀♀, 5 imm. ♀♀, 15 juv. Kn35-346: 1 imm. ♂.

REMARKS. I have now concluded that *C. squamifera* and *C. torulosa* are identical and that any apparent difference was due to the immaturity of the single male on which Fage's description was based.

DISTRIBUTION. *C. squamifera* was first recorded from the Bay of Biscay at 4380 m depth and later between 641 and 860 m. The present records are from many stations in Biscay and some west of Ireland and also on the Gay Head-Bermuda transect between 457 and 4228 m. *C. torulosa* was found on the Gay Head-Bermuda transect between 4680 and 4825 m and later reported by Muradian-Çiamician (1980) off Beaufort, N.C., and southern Greenland between 274 and 344 m. Muradian-Çiamician (1980) suggested that a new description of *C. squamifera* would be opportune.

Campylaspis horridoides Stephensen, 1915

MATERIAL. *Thalassa* 73-Z435: 1 imm. ♂. Z437: 1 imm. ♀. BIOGAS II-DS33: 3 imm. ♂♂, 4 ad. ♀♀, 2 imm. ♀♀. DS34: 2 ad. ♂♂. AII59-211: 5 ad. ♂♂, 1 imm. ♂, 26 ad. ♀♀, 20 imm. ♀♀. 214: 1 imm. ♀.

DISTRIBUTION. Previous records were from the Mediterranean and Biscay between 843 and 2447 m depth. The records reported here were from the same areas but the minimum depth is raised to 509 m.

Campylaspis frigida Hansen, 1908

MATERIAL. AII60-237: 49 imm. ♂♂, 2 ad. ♀♀, 83 imm. ♀♀, 47 juv. 239: 5 imm. ♂♂, 11 ad. ♀♀, 31 imm. ♀♀. 240: 2 imm. ♀♀. 245: 3 imm. ♂♂, 1 ad. ♀, 4 imm. ♀♀.

DISTRIBUTION. Described from the Antarctic and subsequently recorded from Kerguelen (Ledoyer, 1977), Muradian-Çiamician (1980) also recorded many specimens from the southern tip of South America and from the Argentine continental shelf between 24 and 3845 m depth. The finds reported here were off the Argentine coast between 1011 and 2707 m.

Campylaspis verrucosa Sars, 1866

MATERIAL. SMBA-ES15: 6 imm. ♂♂, 5 ad. ♀♀, 17 imm. ♀♀, 6 juv. ES18: 1 ad. ♀. *Thalassa* 70-W357: 7 ad. ♂♂, 3 imm. ♂♂, 5 ad. ♀♀, 6 juv. *Thalassa* 72-Y374: 2 juv. *Thalassa* 73-Z399: 1 juv. Z414: 2 imm. ♀♀. Z439: 1 imm. ♀. Z449: 1 imm. ♀. POLYGAS-DS26: 2 ad. ♂♂, 4 imm. ♂♂, 11 ad. ♀♀, 4 imm. ♀♀, 1 juv. BIOGAS III-DS49: 2 ad. ♀♀, 3 imm. ♀♀. DS50: 1 imm. ♂, 2 ad. ♀♀, 2 imm. ♀♀. BIOGAS IV-DS51: 3 ad. ♀♀, 2 imm. ♀♀. DS52: 2 ad. ♀♀, 4 imm. ♀♀, 1 juv. DS55: 1 imm. ♂, 2 imm. ♀♀, 7 juv. BIOGAS VI-DS86: 2 imm. ♂♂, 2 ad. ♀♀, 21 imm. ♀♀, 14 juv. DS87: 1 ad. ♂, 7 ad. ♀♀, 11 imm. ♀♀, 10 juv. DS88: 1 juv. CP23: 1 imm. ♂, 2 imm. ♀♀, 3 juv. CP24: 2 imm. ♂♂, 1 ad. ♀, 1 juv. CP25: 1 imm. ♂, 5 juv. Ch106-313: 1 imm. ♂, 16 ad. ♀♀, 41 imm. ♀♀. 321: 1 imm. ♂.

DISTRIBUTION. Previously recorded from off Norway to the coast of Portugal and from the Mediterranean between 100 and 1739 m depth, it is now also recorded from Biscay and west of Scotland and south of Gay Head down to 4125 m.

Campylaspis globosa Hansen, 1920

MATERIAL. IOS-7709 # 62: 2 ad. ♀♀. 7709 # 66: 1 ad. ♀. 7709 # 72: 1 imm. ♀. 7709 # 73: 6 ad. ♀♀, 4 juv. 7709 # 85: 4 ad. ♀♀. SMBA-ES4: 4 imm. ♂♂, 2 ad. ♀♀, 10 imm. ♀♀. ES12: 9 imm. ♂♂, 2 ad. ♀♀, 6 imm. ♀♀, 13 juv. BIOGAS I-DS09: 1 ad. ♂, 2 ad. ♀♀, 1 juv. DS13: 10 ad. ♀♀, 1 imm. ♀. POLYGAS-DS15: 1 ad. ♂, 3 imm. ♂♂, 1 imm. ♀, 1 juv. DS18: 2 ad. ♂♂, 5 imm. ♂♂, 5 ad. ♀♀, 18 imm. ♀♀. DS25: 1 ad. ♀, 1 juv. DS28: 1 ad. ♀. BIOGAS II-DS31: 1 ad. ♂, 4 imm. ♂♂, 18 ad. ♀♀, 17 imm. ♀♀, 3 juv. DS32: 1 ad. ♀. DS33: 1 imm. ♂, 1 imm. ♀. BIOGAS III-DS35: 2 imm. ♀♀, 1 juv. DS36: 1 ad. ♀. DS38: 1 imm. ♀. DS41: 1 imm. ♂, 3 ad. ♀♀, 1 imm. ♀, 2 juv. BIOGAS IV-DS51: 1 imm. ♂, 3 ad. ♀♀, 4 imm. ♀♀, 4 juv. DS62: 1 imm. ♂. DS63: 1 ad. ♀, 2 imm. ♀♀, 1 juv. BIOGAS VI-DS74: 1 imm. ♂, 6 imm. ♀♀, 1 juv. CP09: 1 imm. ♀. NORBI-CP11: 1 imm. ♀. Ch88-207: 1 imm. ♂, 3 ad. ♀♀, 4 imm. ♀♀. Kn25-299: 4 imm. ♂♂, 3 ad. ♀♀, 10 imm. ♀♀. Kn35-346: 2 ad. ♂♂, 8 imm. ♂♂, 5 ad. ♀♀, 8 imm. ♀♀, 2 juv.

DISTRIBUTION. First described from the Davis Strait and subsequently from the Gay Head-Bermuda transect between 498 and 2886 m depth, it was also reported by Muradian-Çiamician (1980) off Beaufort. N.C., between 334 and 2030 m. It is now recorded from many stations in Biscay and also from off Norway, west of Ireland and from one station off Surinam and its depth range extended to between 300 and 4413 m.

Campylaspis nodulosa Sars, 1887

MATERIAL. All60-240: 1 imm. ♀. 245: 3 imm. ♀♀. 246: 8 imm. ♂♂, 2 ad. ♀♀, 22 imm. ♀♀. 247: 2 imm. ♂♂.

DISTRIBUTION. Described from the Antarctic and recorded from Kerguelen (Ledoyer, 1977) and also by Muradian-Çiamician (1980) from the Argentine shelf and slope, between 64 and 1475 m depth, it is now recorded from deeper water off the Argentine, between 2323 and 5233 m.

Campylaspis multinodosa Jones, 1974

MATERIAL. All60-259: 34 imm. ♂♂, 1 ad. ♀, 31 imm. ♀♀.

DISTRIBUTION. Described from off South-west Africa between 1007 and 2154 m depth, it is now recorded from a single station off the Argentine coast in 3317 m.

Genus *PARACAMPYLASPIS* nov.

Generally resembling *Campylaspis* but antero-lateral angles of carapace well produced; maxilliped 2 with ischium distinct and propodus drawn out into a long flexible process reach-

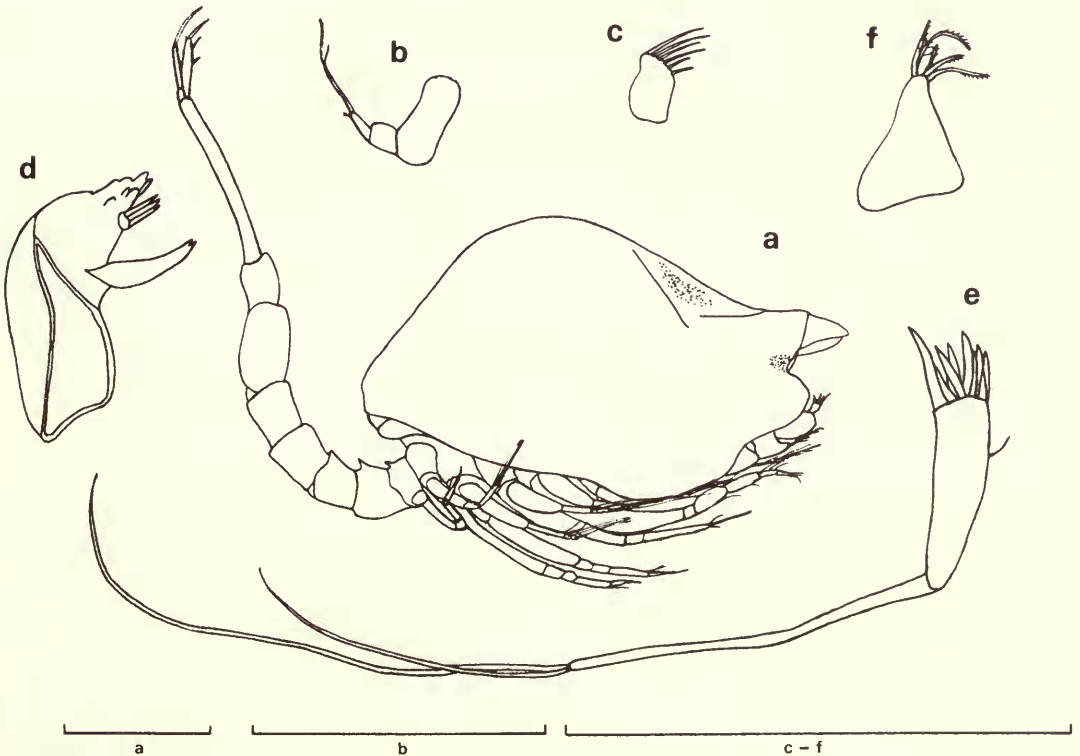


Fig. 49 *Paracampylaspis platycarpus* ♀, (a) lateral view; (b) antenna 1; (c) labium; (d) mandible; (e) maxilla 1; (f) maxilla 2.

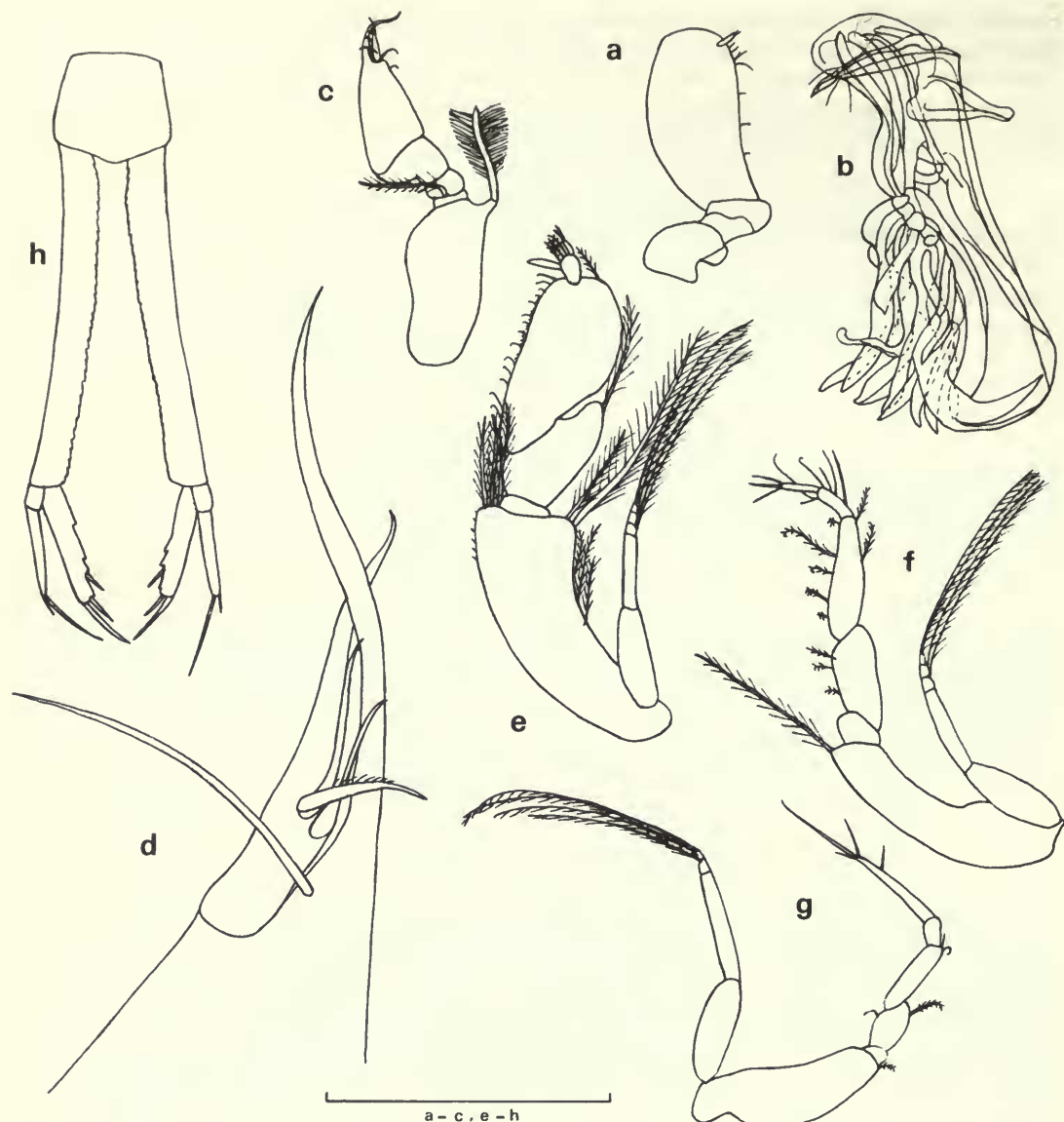


Fig. 50 *Paracampylaspis platycarpus* ♀, (a) maxilliped 1; (b) branchial part of maxilliped 1; (c) maxilliped 2; (d) distal part of maxilliped 2 (further enlarged); (e) maxilliped 3; (f) pereopod 1; (g) pereopod 2; (h) uropods and end of pleon.

ing well beyond the end of the dactyl and maxilliped 3 with carpus much expanded, forming with its fellow a valve covering the mouthparts.

Paracampylaspis platycarpus sp. nov.
(Figs. 49, 50)

MATERIAL. IOS-6696: 2 ad. ♀♀. SMBA-ES20: 1 ad. ♂. *Thalassa* 73-Z429: 1 ad. ♀, 1 juv. Z447: 1 ad. ♀.

DESCRIPTION. Adult female, length 5.1 mm: carapace (Fig. 49a) strongly domed dorsally and overlapping the first three pereon somites, without spines or serrations; antennal notch

excavated and antero-lateral angle well produced but rounded; eyelobe rudimentary. Last pereonite and first two pleonites with dorsal backward-pointing projections.

Antenna 1 (Fig. 49b) with segments rather stout, the basal longer than the second and third together. Mandibles (Fig. 49d) with molar process styliform as in *Campylaspis*. Maxilla 1 (Fig. 49e) with two palps. Maxilla 2 (Fig. 49f) a single plate without endites. Maxilliped 1 (Fig. 50a, b) similar to that of *Campylaspis*; branchial part with about 15 leaflets and two accessory lobules. Maxilliped 2 (Fig. 50c, d) with the ischium distinctly separated; the terminal seta on the basis is thickened and heavily plumose; the propodus is broad at the base and elongated, ending in a long flexible process; the dactyl is articulated inside the base of this process and is also elongated and flexible, bearing several setae, but is much shorter than the propodal process. Maxilliped 3 (Fig. 50e) with basis stout, widest distally, shorter than remaining segments together; the merus is broad and expanded outwards and the carpus much expanded; the propodus is short and has a stout spine on the inner edge; the dactyl is narrow and small. In pereopod 1 (Fig. 50f) the basis is shorter than the remainder of the appendage; the merus and carpus are fairly broad; the propodus and dactyl are subequal and narrower, together about $\frac{2}{3}$ as long as the carpus. In pereopod 2 (Fig. 50g) the dactyl is moderately tapered, about three times as long as the propodus and distinctly longer than the carpus. The uropods (Fig. 50h) long, about as long as the last four pleonites combined; bases serrated on the inner edge, nearly three times as long as the endopod, which is also serrated on its inner edge and has three spines; the exopod is narrower and somewhat shorter.

Adult male, length 5.7 mm; generally similar in shape to female. Dorsal projections on last pereonites and anterior pleonites with bunches of hooked setae. Second antennal flagellum reaching beyond hind end of pleon.

TYPE LOCALITY. 28° 06' N. 13° 28' W, 1780 m. Type specimens deposited in the British Museum (Natural History). Holotype 1982:370:1, allotype 1982:371:1, paratype 1982:372:1.

DISTRIBUTION. Recorded from the Canary Islands, the Bay of Biscay and west of Scotland, 1271 to 1780 m depth.

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